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ABSTRACT

This guide is intended to familiarize secondary students with the variety of occupational opportunities in the health field. It may be used in one of three ways--as a health career reference for guidance counselors, career counselors, teachers, and students; as a guide to introduce students to the health field; or as a text for career education. The guide is organized into five parts. The introductory part covers thinking about a career and establishing career goals, career opportunities and the question of training, and steps in using the handbook. Seven different health care settings are described in section 2. The third section describes several occupations in each of the following clusters: clinical laboratory, dental, dietetic and nutritional, eye care, health administration, clerical and support, health education and community, information and communication, medical instrumentation and machine operation, medical, nursing and physician extender, pharmaceutical, and rehabilitation services. The fourth part, which deals with planning a career, covers discovering personal attributes and goals, decision making, employment opportunities, educational requirements, and flexibility in planning. Section 5 provides a 12-page list of printed and audiovisual resources. Appendixes include a list of professional organizations and definitions of various worker and people functions and operations involved in the health occupations described. (MN)

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A GUIDE TO HEALTH OCCUPATIONS

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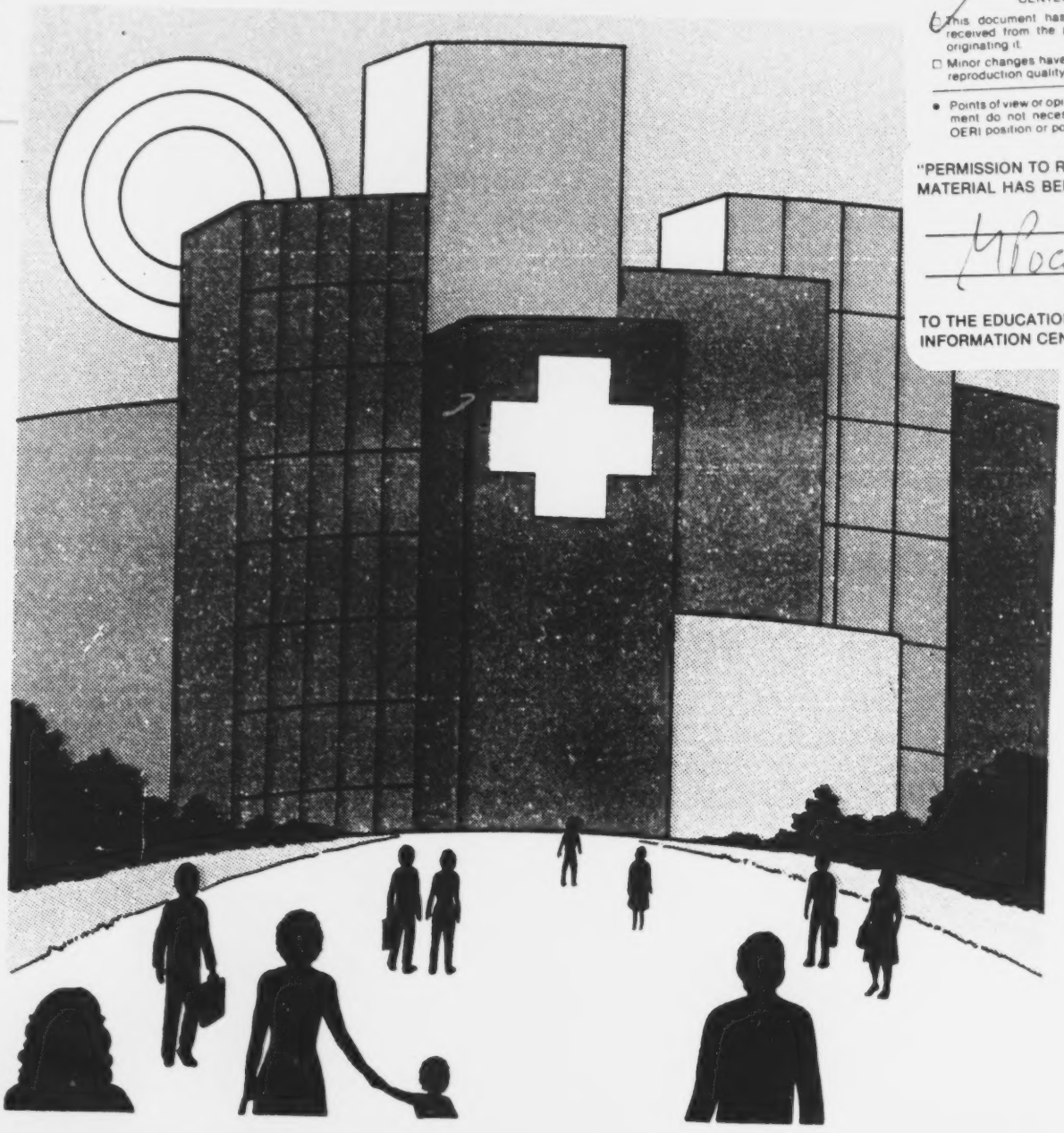

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A GUIDE TO HEALTH OCCUPATIONS

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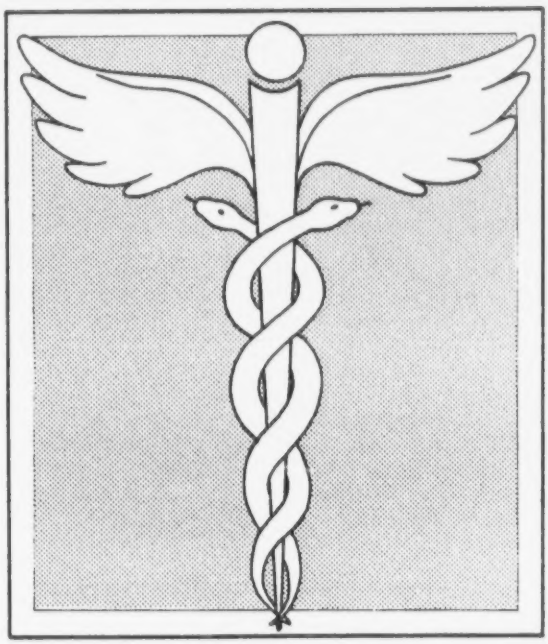
A. Thinking About a Career



Choosing a career is perhaps one of the more difficult and exciting decisions that a person encounters. Given so many choices, one wonders where to begin! Surveying the possibilities is a first beginning. Equally important is learning more about yourself: What do you truly like doing? What excites your curiosity? What are your strengths and weaknesses? What type of life-style appeals to you? Then comes the tasks of matching your personality, skills and interests with possible career choices.

This handbook is designed to help you think about the variety and range of career possibilities in the health field. Intelligent and wise choosing is knowing "what's out there!" Although you may not have even considered a health related career, you may discover something new about the health care field and do more exploring. From this you may gain some different ideas about the world of work and start to narrow down the choices.

My Likes and Dislikes

Because a career is often a life-long pursuit, understanding what you like and dislike is very important. In many cases, knowing one's likes and dislikes comes only after one has tried them. However, when you can begin to identify some preferences, the sorting out process becomes easier.

A good way to start is to think about the things that you do. Ask yourself some of the questions below:

- What are my hobbies? Why did I select them?
- What types of activities give me the greatest enjoyment? What are the most boring?
- What skills have I developed from my hobbies, extracurricular activities and sports? Are there some skills that I might want to apply in the work world?

- Do I like to try many different things or stick to a few things? Should I seek a career where I constantly encounter new challenges, or am I more comfortable with a more stable routine?
- What courses have I found to be most interesting? Easy? Difficult?
- Do I like working under pressure and making fast decisions, or do I prefer a calm environment?

Following your interests and developing your skills are important in considering a career, because being satisfied in your work has much effect on your personal happiness as well as that of your family's. It can be very disappointing after long years of training to suddenly discover that you do not enjoy that work. Yet, a wrong career choice is not the end of the world. If you know how one type of career might relate to another or how similar skills and knowledge can be utilized in another area, new opportunities can suddenly emerge and you will have more options. Making a change may not be all that difficult. It is a matter of knowing the opportunities.

Different Workplaces

In many instances, it is not the work that one does not like but the type of workplace. When you explore the various careers, examine also the many types of work settings which employ those workers. You may be surprised to find that a particular occupation becomes quite appealing in another setting. For example, working as a physical therapist in a hospital or clinic might not thrill one person, but that very same person might enjoy being a physical therapist at a fitness center or with a football team. So, do not disregard an occupation based on the workplace that you typically associate with that job. With the changing approach and attitudes towards health care, there are many new and different work settings for health care workers.

Another consideration is where you like to live. What type of area do you enjoy? Large metropolitan? Suburban? Rural? Would you be willing to move for a particular type of job? Different areas offer different opportunities. This is especially critical in the health field. If you are interested in a very specialized occupation, working with highly sophisticated equipment, do not expect to find work in a rural area. Rural areas for the most part do not have the population to support the more specialized services. However, health care personnel are in great demand in rural areas. Jobs there require people with more general training who can perform a wider range of functions than people who are more specialized. If you happen to prefer a rural environment, look for occupations with higher job opportunities in those areas.

In deciding between a rural or metropolitan area, the question of salary may be important. As a rule, salaries in rural areas tend to be lower (but the cost of living also may be lower). Making a decision involves making "trade-offs". It is asking yourself what is more important: A higher

salary? A less hectic pace and the outdoors? What are you willing to trade?

Think about the various types of workplaces and how you might view yourself working in those settings. What type of organization appeals to you? Small group or larger group? Would you prefer to be your own boss? If so, is it possible in that occupation, and how might it be accomplished? Some people enjoy work where there is a great deal of interaction with other people, while others prefer to work alone or with a few co-workers. Awareness of the setting you prefer is another factor in selecting a career. The setting makes a difference in the pleasure you will derive from the work.

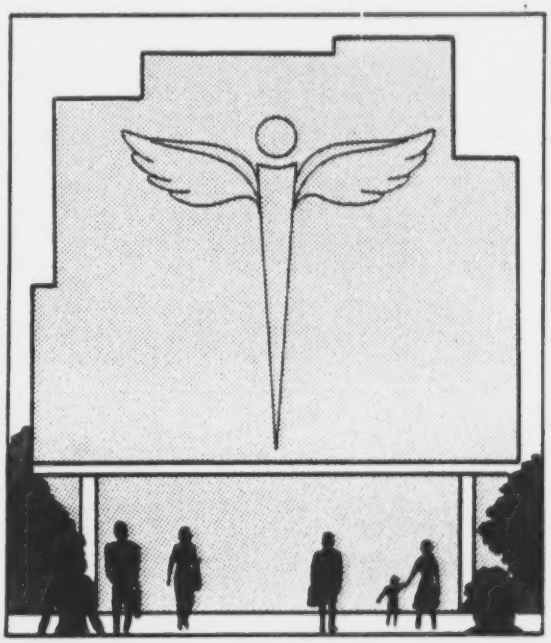
Future Goals

Choosing a career is very much like an exercise in forecasting the future. Unfortunately, no one has an accurate crystal ball that tells you that today's decision is what you will want 10 years from now. Nonetheless, it is useful to set future goals to guide you in planning carefully and wisely. Leave room for making changes in case your interest changes or job opportunities change.

In setting some future goals, talking to other people is most useful. Talk to people in a variety of areas and of different ages. Most people are willing to share their experience so do not be afraid to ask or think that your question is foolish. No question is foolish if you sincerely want to know. Find out what people like about their jobs, what gives them the greatest satisfaction, as well as what they do not like. Remember that people are giving opinions. As you obtain more opinions, you will construct a better picture of a particular job . Then ask yourself, "Is this where I would like to be 10 years from now, 20 years from now?" Recognize that jobs are not always as glamorous or exciting as they are portrayed on television. Most all jobs include the routine and mundane. Even famous scientists spend years performing tedious, repetitious experiments before making that one great discovery!

Goal setting also involves adjusting the ideal with realities. Setting lofty goals that one cannot attain can lead to much disappointment and frustration. On the other hand, in setting one's vision too low, one soon lacks challenges and loses interest in the job. Many health careers require special abilities as well as long, extended training. Various tests given through your school counseling service can offer insight into your interests and abilities. They are useful in helping you learn more about yourself, but of course, are only general guides. Some factors such as motivation and ability to overcome obstacles are more difficult to measure. It is up to you to decide if you want to devote the time, effort and money for the future rewards of doing what you think will be interesting, challenging and fulfilling.

B. An Overview of Careers in the Health Field



What comes to mind when you hear the words "health care"? Doctors and nurses? Dentists? While they are the more commonly known health professionals, they represent but a small percent of the personnel in the field of health care and allied health services. Over 5 million people in the United States are employed in health care. Physicians, dentists, pharmacists, and registered nurses make up about 33 percent of the total while the larger majority include therapists, technologists, technicians, scientists, engineers, counselors, and administrators. They represent over 300 kinds of health occupations. Health care extends beyond the traditional hospital setting. Today, large numbers of health care workers are found in settings such as: community health centers, fitness centers, long term care facilities, rehabilitation centers, mental health facilities, home health agencies, clinical and research laboratories, schools and industry, to name a few of the health care employers.

Health care occupations are so varied that a person with nearly any type of training, ability and interest might be able to find a suitable career in the health care field. The jobs range from serving people directly to those which involve manual and mechanical activity. However, they are all, in some way, related to helping others and contributing to the betterment of health.

This handbook is intended to present a sampling of the many opportunities in the health care field and the variety of ways in which a person might enter the health profession. Because health services and the way we think about health have changed in recent years, the role of health care workers has also changed. When you learn more about this rapidly expanding field and what people do on the job, you may discover an area that intrigues you. From there your career planning will start to take form.

What Are the Prospects?

The demand for health care workers has been steadily increasing and the number of jobs in the health field is expected to grow faster than the average of all other occupations. There are a number of reasons for this. Since Congress enacted Medicaid and Medicare laws, health services have been made available to many people who previously received little medical attention. Developments in science and medicine offer new techniques and instruments for treatment, requiring people with more specialized training. Injuries and diseases that once had no treatment can now be treated. As more people are covered by private health insurance, they have begun to utilize services that they were reluctant to use. That is, people no longer wait to visit doctors when they are seriously ill. They are taking advantage of preventive health care services such as annual checkups, nutritional planning, and physical fitness programs. More medical facilities have been built in the past two decades, making it easier to obtain medical treatment. Also, our increased population of senior citizenry has resulted in the need for workers to provide for their care, because the elderly are more susceptible to disease and require longer time to recover.

These factors and our attention to providing better health care have greatly expanded the number of health care positions and the types of services available.

Moreover, the duties and responsibilities of health care workers, in many cases, have markedly changed. Since the cost of medical care is high, it is inefficient, for example, to have physicians perform routine functions. Skilled technicians now assist physicians in many patient care activities. Registered nurses, especially those with additional training, are involved in more administrative and supervisory roles while practical nurses, aides, and technicians take on many of the direct patient care duties.

With the high cost of medical services, the prevention of illness has taken on new importance. Also, people in general are more interested in physical fitness. The area of preventive medicine is expanding. Personnel needed to inform the public about the maintenance of good health or dealing with their illness include: health educators, social service workers, counselors, therapists and nutritionists. Health and patient education programs have become an integral part of health services.

The Question of Training

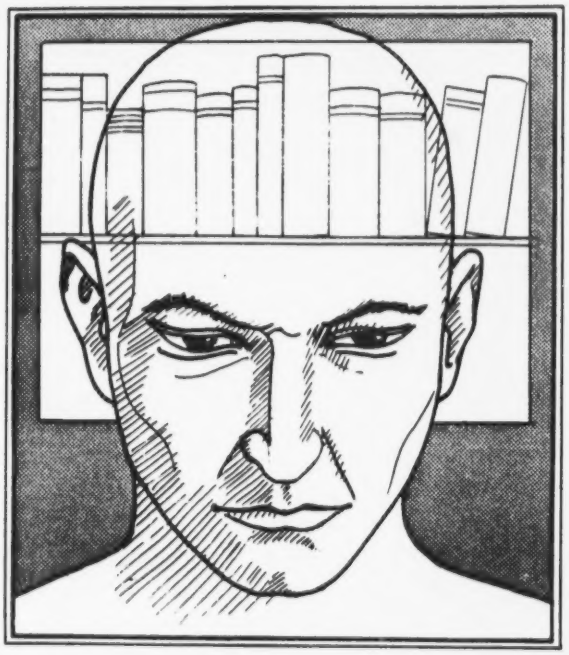
In today's world of high technology, workers need specialized training. The degree of specialization will most probably increase in the future. Advances in technology also change the types of skills needed. For example, with computers, secretaries are doing less filing and typing and are assuming more functions in organizing and coordinating. Skills such as evaluating and decision-making become more important. Additional training is needed to use the new electronic equipment, training that continues beyond high school. As in other fields, the health care field has also been greatly affected by technological advances. Technicians must be specially trained to operate and service modern equipment and electronic instruments. Specialized knowledge means more training and perhaps a longer training period.

It is therefore important to know what preparation is required in order to be qualified to receive training in a particular area. As you explore the various careers, take a careful look at the prerequisites so that you can efficiently plan your course work in school. Become aware of where training is available. Training for some specialties is offered at only a few places in the country so you may have to think in terms of travel. New technologies also mean new specialties. Some specialties are just emerging so schools are now starting to offer the programs. Check with teachers and counselors who have the up-to-date program information.

While the prospects look favorable for growth in health occupations, some specialties may have a great surplus of personnel while others have a shortage. In developing your career plans, you should keep in mind the personnel demands in that specialty and the locales where there may be a shortage. Up-to-date information is available through school guidance departments and state employment agencies. This handbook will only highlight the existing job market trends so it is necessary to keep up with new developments in your planning.

In the past, many people received their training for certain positions by learning on the job. Currently, vocational schools and community colleges offer courses and programs in some of these specialties, such as dental laboratory technology. Although prior formal training may not be a prerequisite for a given occupation, the person who has more training or more highly developed skills has the greater advantage. This is especially true when the job market is tight. Find out as much as you can about school programs and training opportunities when you explore the occupations. Here again your teacher, counselor and people in the profession are excellent resources.

C. Using the Handbook... Discovering What is Out There



The first section of this handbook is intended to introduce you to places which employ health care personnel. The second section goes into greater detail about each occupation and what people do. It is divided into the different service areas, such as nursing, dental, etc. Similar skills and training are usually characteristic of a given service area. However, for the various occupations within a service area, the amount of training varies according to the level of responsibilities and duties performed.

Be adventurous when you scan through these first sections. Read about some occupations that you may have never even considered! You may be surprised to discover that a particular occupation is very different from what you envisioned. Very often people end up in careers far from their wildest imagination when they were your age, so be an explorer and keep an open mind!

The last sections describe some strategies for planning a health career and contain information about additional resources that you might explore in depth. The following terms are used frequently and are defined as follows:

Explanation of Some Terms

LICENSE - is granted by a state or other government agency after a candidate has demonstrated his/her qualification in that area and passes an examination. A license is the permission given to a person to perform a particular type of service or use a certain title. The licensing process is a method to protect the public from unqualified practitioners. Licenses must be renewed periodically according to state regulations.

ACCREDITED PROGRAMS - are educational or training programs that have met the minimum standards established or recommended by a government board or professional organization. In many cases, jobs are opened only to persons trained in accredited programs.

CERTIFICATION - is awarded by non-government agencies or professional associations and is acknowledgement that the person has attained a level of competency in the profession. A candidate receives certification by passing an examination and/or presenting documentation of education and training. In a profession where there is no licensing process, certification is often the requirement for the job. Even when a certificate is not required, employers tend to favor hiring the certified professional. Certification is a process employed by a professional group to maintain the standards of that profession.

REGISTRATION - is the listing of qualified professionals on an official government or professional organizational roster. Registration and certification are often used interchangeably by professional associations.

ACCREDITATION - is granted to schools or colleges by a government agency or professional association. An accredited school has met the minimum standards established by the accrediting body. The standards cover all aspects of the school's operation to insure that it will provide adequate education and training for its students. In some states, only professionals trained at accredited institutions are allowed to practice. Therefore, education received from non-accredited institutions may limit employment opportunities.

Medical Terms

Do not be discouraged by some of the long names or titles in this handbook. Most words are combined terms. Deciphering them requires simply taking them apart and knowing what each part means. The definition becomes quite obvious once you understand the basic roots. Most roots are from Greek or Latin words.

FOR EXAMPLE: electroencephalographic

electro/encephalo/graphic

electro - refers to the use of electricity or measurement of electrical changes

encephalo - refers to the brain

graphic - refers to a picture or an illustration

Therefore, electroencelphalographic simply means recording a picture of brain activity. Our brain works through electrical changes. So the brain wave that is recorded indicates electrical changes or electrical activity.

SOME COMMON ROOTS

ROOTS	REFERS TO
audio -	hearing, sound
bio -	life or living process
anesthesio -	the loss of sensation or consciousness
cardio -	the heart
cephal or cephalo -	the head
cyto -	cells from body tissue
derma -	skin
encephal or encephalo -	brain
endo -	the inside or inner layer
graph or graphic -	picture, chart or illustration
gyneco -	women
hema or hemo -	blood
histo -	the structure of living tissue
neuro -	the nervous system--brain, nerves
ologist -	specialist
optic -	eye or vision
orth or ortho -	serum, straight, corrective
path or patho -	disease
ped or pede -	foot
sero -	serum

Using the preceding table, try to determine what people with the following job titles do:

ORTHOPIST AUDIOLOGIST ORTHOPEDIST

Check your definition with that in the dictionary. Were you surprisingly accurate?

Occupational Titles and Numbers

You will notice a nine-digit number by every occupation in this handbook. These numbers are codes used for each occupation listed in the Dictionary of Occupational Titles (D.O.T.) which is put out by the U.S. Department of Labor. The code identifies each occupation from all others. The coding provides: 1) a system for listing occupations, and 2) a standardized usage so that people can more effectively compare employment information. This coding is also a shorthand method for describing the nature of the occupation and work requirements.

At some point in your career search, you may wish to consult a reference such as the D.O.T. which describes all jobs in the United States. The Occupational Outlook Handbook, another reference by the U.S. Department of Labor, also uses the D.O.T. numbers. This reference offers more detailed information about occupations. We will briefly describe the coding system here so that the numbers will become more meaningful to you.

The first three digits describe the occupation. The second three digits describe the functions of the workers. The last three digits are used to distinguish between occupational titles that share the same first six digits. For example, 070.101 is the six digit code for physicians who diagnose medical problems and prescribe treatment. Their specialty--whether it be anesthesiology, cardiology, or dermatology, etc.-- is then given three other digits to distinguish one specialty from another. A pediatrician, for example, is identified by the code 070.101-066.

All jobs are classified within one of nine broad occupational categories:

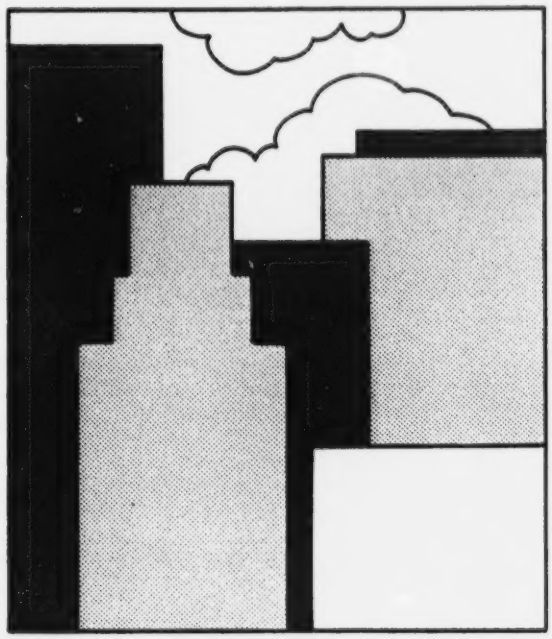
0/1 Professional, Technical and Managerial
2 Clerical and Sales
3 Service
4 Agricultural, Fishery, Forestry, and related occupations
5 Processing
6 Machine Trades
7 Bench Work
8 Structural Work
9 Maintenance

These categories are further subdivided into divisions and then groups which contain closely related jobs.

The middle three digits which are the worker trait codes describe how a worker deals with data, people and things. It is also the way in which the D.O.T. has rated the complexity of the job. More complex tasks have lower numbers while the least complex tasks are numbered six, seven or eight. By comparing the middle digits of various occupation codes you can learn much about what those jobs entail. For a detailed explanation of the worker trait code see the Appendix entitled, Explanation of Data, People and Things.

II. Working in the Health Field

A. Where Do Health Care People Work—



Our typical image of the health care worker is one who works in a hospital or in a physician's office. These are, indeed, places where we are most frequently treated for illness or injury. However, health care workers are employed in many different types of settings, some of which we do not normally associate with the practice of medicine. One of the reasons is that health care today has expanded into a complex system of services and specialties requiring the support of a variety of health practitioners as well as allied health professionals. Also, the greater emphasis on preventive health care has led to the development of new approaches to serve the health needs of the public more effectively and economically. Moreover, advances in medicine and technology have resulted in new forms of treatment that are not necessarily administered at a hospital or a doctor's office. Hence, health care workers may be found in nearly every place where people work.

If you have dismissed the notion of a career in health care because you have not cared for hospitals, think again. You may find an interesting non-hospital setting where you can fulfill your desire to help others and apply your talents! Hospitals employ the largest group of workers, but with changing approaches to health care, non-hospital settings are experiencing rapid growth. For example, a person trained as a nurse may find work in areas other than in bedside patient care. The skills and training of a nurse may be applied in teaching at a medical school, developing a community health program, managing a health club, editing a nursing journal or conducting research. Within each occupation there are a variety of diverse opportunities, many of which do not seem to fit the traditional mold. Yet, these new opportunities in different types of settings need people with a particular type of health care training. Since we will be referring to different workplaces in the section describing the health occupations, we will briefly list and define some of the more typical health care employers.

AMBULANCE SERVICES - provide transportation for the sick or injured to and from hospitals. The majority are operated by fire departments; a number of these are served by volunteers. A smaller number are operated by private companies. Some communities, especially large cities, have advanced life support ambulances employing highly trained paramedics.

BLOOD BANKS - obtain, process, store and distribute blood and blood products. Among the largest are regional blood centers operated by the American National Red Cross. Others are community blood centers that provide blood to hospitals within the community. Some hospitals operate their own blood banks. A smaller number are privately operated as a profit-making business. Blood banks are staffed by managers who administer the program, technologists and technicians who perform lab tests and process blood products, nurses, and drivers for the mobile units.

CLINICAL MEDICAL LABORATORIES - are located in different settings, although most are in physicians' offices and hospitals. Independent clinical laboratories are, for the most part, privately owned and perform diagnostic tests for physicians. Some of the larger labs are operated by government public health agencies. Drug manufacturing companies and other industries also operate clinical laboratories to test and evaluate their products. Directors of clinical labs are physicians or medical scientists who supervise the activities of laboratory technologists, technicians and assistants.

COMMUNITY MENTAL HEALTH CENTERS - provide comprehensive care to the mentally disabled of the community. Funded by the federal government, they operate hospital facilities as well as provide outpatient care and services. They offer the range of therapies and educational programs important in the treatment and rehabilitation of the mentally disabled. Their staff includes psychiatrists, other physicians, nurses, mental health workers, therapists, psychologists and social workers.

COMMUNITY HEALTH CENTERS (NEIGHBORHOOD HEALTH CENTERS) - are sponsored by local communities, hospitals, volunteer agencies, municipal health departments, or several of these groups to serve the non-hospital needs of the poor. They emphasize preventive health care and early diagnosis of disease. Their services include medical and dental diagnosis and treatment, dispensing of pharmaceuticals, X-ray and laboratory facilities, and health education programs. Given the wide array of health services offered, the staff consists of personnel from nearly all the health care occupations.

DENTAL LABORATORIES - for the most past, are operated commercially and produce bridges, crowns, and dentures for dentists. Most dental laboratories are small and serve the general needs of dentists within the local community. Some laboratories specialize in one or more areas. Work that requires very specialized equipment is performed by "processing" laboratories which serve other dental labs. Personnel are dental laboratory technicians.

HOME HEALTH AGENCIES - are operated by local, state or federal government or by private or voluntary organizations such as the Visiting Nurses Association. They provide health services to the sick or disabled who are cared for at home. Services offered include medical treatment, nursing care, therapy, counseling, and medical equipment and supplies. Physicians, nurses, therapists, social workers, home health aides and administrative personnel are employed by these agencies.

HOSPITALS - employ the largest proportion of health care workers. They vary in size from six beds to those having over 1,000 beds. Hospitals are classified as general hospitals or specialty hospitals. Surgical hospitals constitute the largest group of specialty hospitals. Others specialize in psychiatry, chronic diseases, tuberculosis, eye, ear and throat, epilepsy, alcoholism, narcotic addiction, maternity, orthopedics, or physical rehabilitation. Among the general hospitals, most are nonprofit facilities, others are government operated, while a small number are privately owned and managed. Nearly all general hospitals care for patients on a short-term basis. The type of personnel employed will vary with the services offered and the needs of the community. Some of the larger general hospitals which offer diverse services can be compared to a small city with facilities to meet most every imaginable health care need, as well as shops, restaurants, gyms and schools.

LONG-TERM CARE FACILITIES (EXTENDED CARE FACILITIES) - include nursing homes (although some nursing homes are classified as resident care facilities) and long-term care hospitals such as psychiatric, chronic disease, and tuberculosis hospitals. They serve patients who require highly skilled and specialized nursing care on a daily basis. Patients in these facilities may also need a variety of therapy and rehabilitative services. Such facilities employ, in addition to physicians, nurses, technicians, and therapists, aides trained in the various rehabilitation therapies.

OTHER IN-PATIENT HEALTH FACILITIES - include those serving patients who are not necessarily ill or elderly. Patients in these facilities may not need skilled nursing attention daily, but need rehabilitation services. Over half of these facilities are for the mentally retarded which offer special education programs in addition to medical and therapeutic services. Another large group are homes for the mentally disturbed. Also in this in-patient category are homes for dependent children, orphans, and unwed mothers, schools for the physically handicapped and the deaf and blind, and treatment centers for alcoholic and drug abusers. Many of these facilities focus on special educational programs. Medical and nursing staffing may be minimal, while rehabilitation, personal care, and education personnel are in the majority.

PHARMACEUTICAL FIRMS - although they do not deal directly with patients, are a critical link in the total health care system. Moreover, they employ a number of health care professionals, such as physicians, pharmacists, biological scientists, biomedical engineers, biochemists, medical illustrators and photographers, laboratory technicians, and so on. Areas of work include research and development, production, marketing and sales, and information services.

RESEARCH CENTERS - are the source and testing ground of new ideas and products for the improvement of health and health care. Most are associated with medical schools, universities and government agencies. Much of our medical science research efforts are funded by the federal government. Some research centers are supported by private agencies, nonprofit organizations or industry. Many of the researchers come from the basic sciences, biological, chemical and physical, while others come from the health care specialties such as medicine, pharmacy, nutrition, rehabilitation, environmental health and so on. Technologists, technicians, laboratory aides, administrators, and clerical staff also are part of the research team.

GOVERNMENT AGENCIES - The government is the largest single health care employer operating clinics and hospitals, such as the Veterans Administration hospitals, supporting medical care for the aged and poor (Medicaid and Medicare programs) and funding hundreds of training and service programs. At state and local levels, the government also supports a variety of programs and provides health care services. Many of them focus on controlling communicable disease, insuring food, water, air and soil quality and providing health education.

The major federal health organization is the Public Health Service whose agencies are involved in programs that span the entire range of health care services. Some of these include:

- The Alcohol, Drug Abuse and Mental Health Administration (ADAMHA) is concerned with the prevention and treatment of mental illness and the misuse of alcohol and drugs. Among the activities are treatment programs, research, programs to train personnel, and programs to educate the public.

- The Center for Disease Control (CDC) prevents and halts the spread of disease transmitted by humans, animals and insects or through water and air.

- The Food and Drug Administration (FDA) insures that drugs and food sold to the public have been processed safely and do not contain harmful or dangerous ingredients. It also checks medical products to insure that they confer the benefits as claimed.

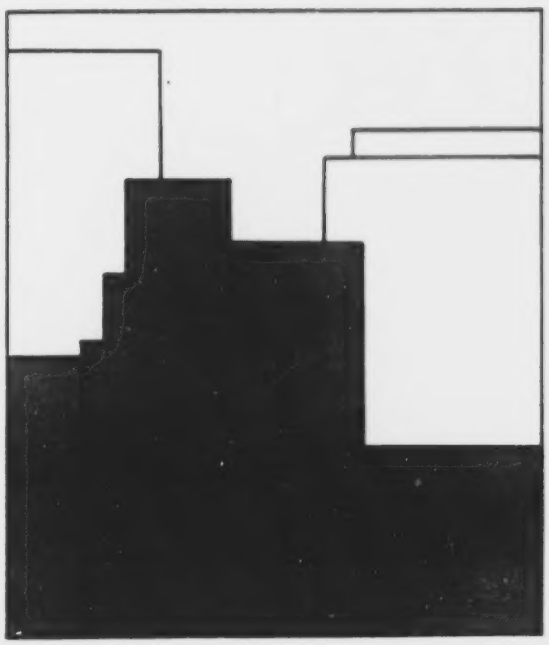
- The Health Resources Administration (HRA) has the responsibility of encouraging the education of sufficient health personnel to meet the country's needs. It assists schools in the development of new programs or revision of existing programs.

- The Health Services Administration (HSA) helps to make health care available to all Americans by providing care in areas with a shortage of medical personnel, helping states and local communities develop emergency medical services, and training health care personnel to work in underserved areas.

- The National Institute of Health (NIH) funds as well as conducts medical research. Training of medical researchers is one of the uses of funds awarded to universities and medical research centers.

B. Some Health Care Settings

The following are some health care settings described in greater detail. A few of these reflect some changing or different approaches to health care delivery. Several of these have become established in recent years because of changing health care needs, while others have developed in response to the high costs of health care services. Although our basic medical and dental needs will not change, how those services are provided may experience dramatic changes in the future. By the time you enter the work world, there may be a greater variety of settings where you may apply your training, or the current places where some health care personnel work may be organized quite differently. The health care field, like many other fields, is expanding in many different directions. Some settings may play a more dominant role in the future.



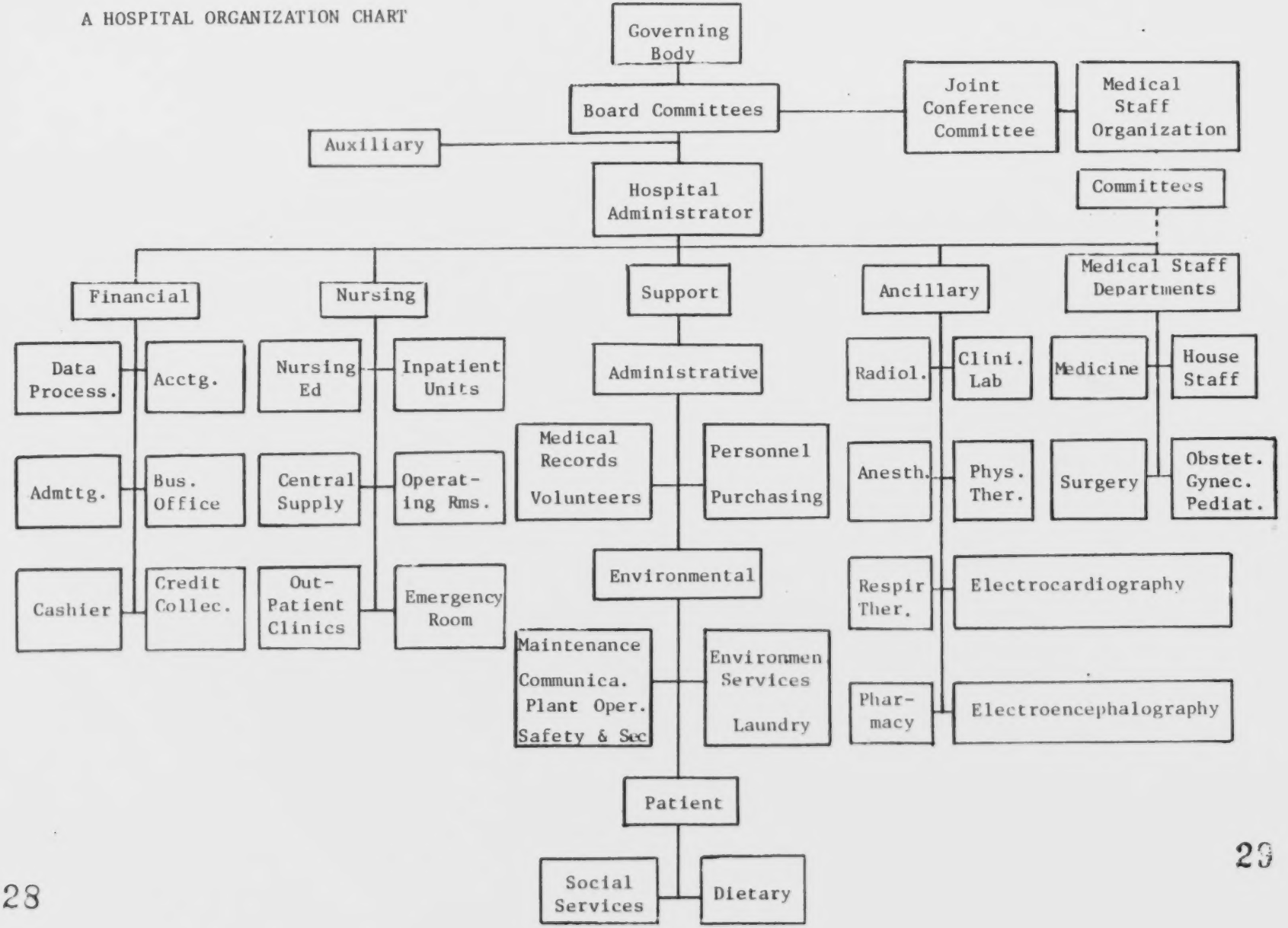
A General Hospital and Some of Its Departments

While we are familiar with hospitals as places where people go for a variety of medical treatments or life threatening emergencies, we are perhaps less familiar with the multitude of activities involved in running a hospital. Patient care depends upon the services of many different types of health care personnel, a large number who have no direct contact with patients. The many "behind-the-scene" hospital staff range from the administration and clerical to equipment maintenance to food preparation.

To provide some insight into the complex of activities necessary to run today's hospitals, some of the lesser known departments and units will be described. As you read through these, you will see that hospitals rely on people who represent a wide range of skills and training.

On the following page is a chart which shows the organization of a typical community hospital. One can easily see that it is, truly, a complex of components that provide services in very different ways.

A HOSPITAL ORGANIZATION CHART



Environmental Services Department

Behind the scenes of every hospital is the environmental services department. This less visible department, formerly known as housekeeping, provides vitally necessary services. Maintaining high standards of cleanliness, and in some areas a sterile, germ-free environment, is essential to the health of patients and employees alike. For this reason it would be misleading to call this department just "housekeeping." The services extend beyond mere cleaning to maintaining highly controlled environments found in few other institutions.

The responsibilities of this large and carefully trained staff range from choosing and testing cleaning chemicals to helping design new facilities and room decorating. The staff is also called upon to move equipment or help in emergency clean-ups such as breakage, flooding, etc.

This department works closely with other departments--laundry, maintenance, infection control and the medical personnel. General and specialized cleaning chores must be carefully scheduled so as not to interrupt medical treatment or patient care.

You may wonder how cleaning in a hospital differs from cleaning anywhere else. Some of it is not too different, such as in offices, lobbies and reception areas. The important differences are in patient areas.

Some areas must be kept completely sterile and germ-free--operating rooms, delivery rooms, nurseries, and isolation rooms (rooms where patients with contagious diseases stay). These very special areas place a unique responsibility on the environmental services department of hospitals. Let's take a closer look at the special needs of these important places.

Newborns are easily susceptible to germs, and exposure to any possible contamination must be avoided. All persons coming into contact with newborns must wear a sterile hospital gown. Nurseries are cleaned thoroughly from top to bottom--ceiling lights to floors, walls to glass, counters to air vents.

The labor and delivery rooms must be attended to after each use. Again, the cleaning is so thorough that even the beds are washed down, including mattress and springs!

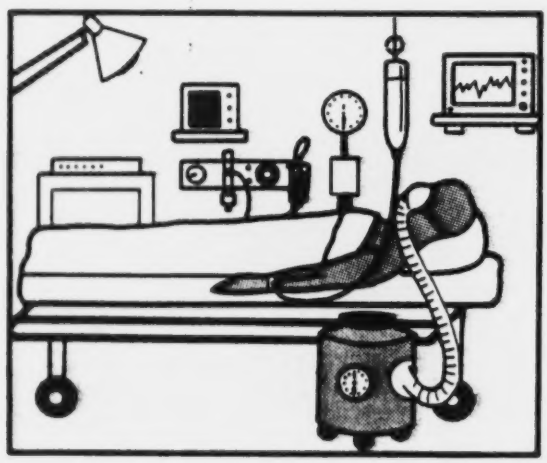
Probably the most highly controlled environment is that of the operating room. To prevent contamination of any sort, even the environmental service staff must be completely gowned, from hair to shoes, in order to work here. The staff is on-call to clean after each operation. All parts of this room are cleaned with special germicidal solutions to assure sterility.

Isolation, as the word implies, means that everything must be kept separate. Equipment used here cannot be used anywhere else. This is to prevent contaminates from leaving or entering the room. For protection against infectious materials, workers must be covered with a cap, mask, gloves and gown. Since all items in the room are considered contaminated,

everything must be disposed of in a special way. For example, even drapes and soiled linen are handled separately from other hospital laundry. Great care is taken to assure the protection of patient and staff alike.

The value of this department cannot be underestimated. The effectiveness of environmental services assures a quality hospital.

Intensive Care Unit



The Intensive Care Unit (ICU) of a hospital utilizes some of today's most advanced and sophisticated biomedical equipment. Also, some of the most sophisticated treatment procedures are performed here. This is the specialized unit which cares for patients in serious conditions following surgery, a heart attack, accident or other life threatening condition. Some larger hospitals and medical centers have separate intensive care units--surgical intensive care, burn intensive care, shock intensive care, neurological intensive care and pediatric intensive care. They are designed to provide the attention and special equipment necessary to respond to the patient's critical situation. Most ICUs are separate, self-sufficient facilities where diagnostic, monitoring, and treatment equipment and supplies are immediately available. Patients may require special life support systems such as respirators to help them breathe. Others may require a continuous intravenous so that medication, if suddenly needed, can be administered quickly and efficiently. Still others may require continual renal dialysis.

Patients who are seriously ill or injured need continuous and specialized care as well as constant assessment of their condition. Much of the monitoring today is accomplished using sophisticated electronic equipment. Heart rate and rhythm of a coronary patient, for example, are monitored by an EKG (electrocardiograph) equipment system. The heart activity pattern is shown on the screen by the patient as well as at the nursing station (where nurses can observe the EKGs of several patients simultaneously). The machine will signal the nursing staff if there is a sudden change in the patient's condition. The information is stored in its computer memory bank which can be retrieved and printed out for review

and study at a later time. More complex machines will monitor several vital functions such as respiration rate, body temperature, brain activity, blood pressure and so on.

Perhaps the most important characteristic of an ICU is the specially trained team of physicians and nurses who can respond to the critical patients' needs. All personnel on this unit have had advanced training. A sudden change in a patient's condition requires decisions and treatment action that may mean the difference between life and death. Therefore, the combination of alertness, knowledge, and problem solving skills provide the basic ingredients of the ICU. Advances in equipment technology and therapy techniques have significantly revolutionized the care that these specialists can provide.

Medical Records Department

The medical records department is the patient information library of the hospital. Here all information of a medical nature is stored. It is essential to keep complete records of all patients and services provided them from admission to discharge. Since a medical record is a permanent document, it is not discarded upon a patient's discharge. When not in current use, a medical record is stored usually in a computer file or on microfiche.

A medical record serves as a major source of information. It describes details of a person's state of health--illnesses, injuries, operations, hospitalization. It includes diagnoses, treatments, complications, tests, and any other medical reports or health information. This medical history is an accumulation of information from many sources. Not only does the patient contribute to the report, but also physicians, nurses, lab technicians, and other health team members. Therefore, medical records are the vital statistics of hospital activity.

Although much work in a medical records department is of a clerical nature, it also consists of gathering and analyzing information, organizing and reviewing reports and records. This work is essential for reasons other than storing information for doctors' use. The information is used for health statistics and hospital needs assessment and so must be accurately classified in different categories. Data are kept on many types of things. From these data, statistical reports are written and analyzed. Hospitals need to keep track of the number of patients admitted, types of diseases treated, operations performed, and other health care information. Reports prepared by this department help the hospital identify needs on a day-to-day basis as well as to study trends and plan for the future. This information may indicate the need for a larger or additional hospital or clinic to service the needs of a community. Assessing internal needs such as staffing or the utilization of equipment depend on reports prepared by medical records. The information can also help the administration to evaluate how well the hospital services its patients.

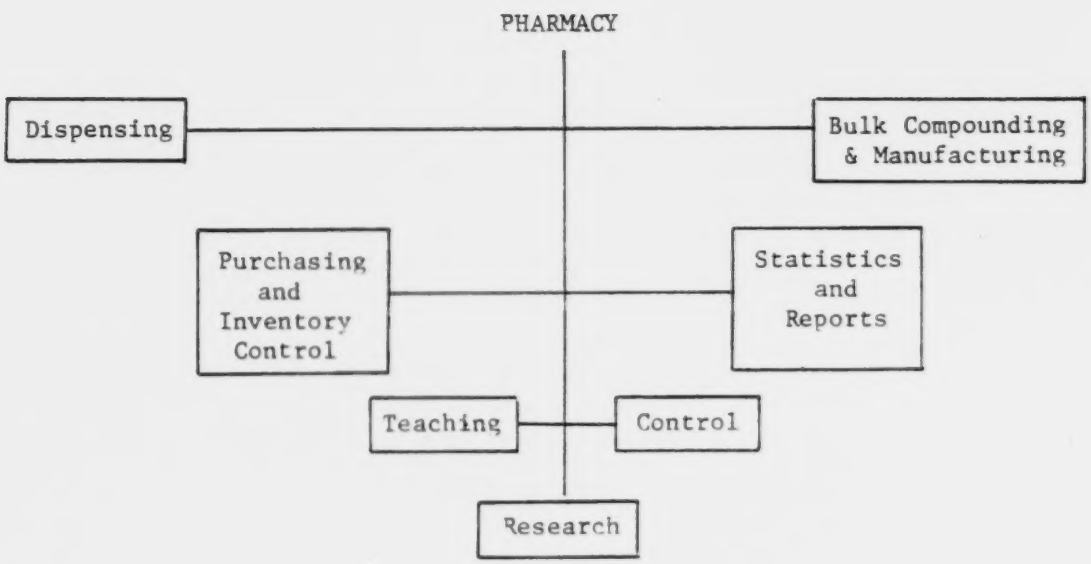
Medical record information is also used by medical personnel and health agencies outside of the hosptial. It is employed for insurance purposes--to verify and complete insurance claims. Medical information is often important in court cases, providing evidence to settle disputes. Public health officials seek information to study health trends. Frequent occurrence of a disease may be a sign of an epidemic. Finally, medical record information is used in research.

A relatively new position in the medical records department is the tumor registrar. This person has the responsibility of keeping track of all information pertaining to cancer patients. The accumulated information can provide data for future diagnosis, treatment, research, and planning of hospital facilities.

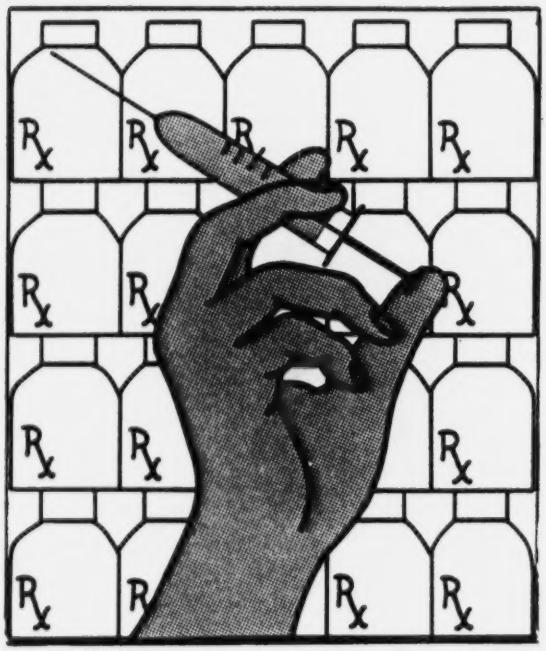
More and more of these activities are being computerized. Therefore, all this information must be put into computer language. Everything from name, age and sex, to diagnoses and doctors' written directions, is coded and entered into the computer.

The medical records department may be viewed as an information gathering system which in turn organizes and extracts information for the health care community to make informed decisions.

Hospital Pharmacy



Hospital patients usually require some type of medication in their treatment. As such, the pharmacy department is an integral part of every hospital. As the chart on the preceding page indicates, this department does more than simply fill prescriptions. Let's take a look at some of the different functions of a hospital pharmacy department.



It is important that patients receive the appropriate medication in the correct form and dosage at the proper time. The hospital pharmacy participates in the patient's entire therapy. It follows and monitors the patient's treatment, keeping detailed records on the patient's progress and response to the drugs. Physicians seek its advice and knowledge when planning patient treatment.

Most medications needed for filling prescriptions are available from the manufacturing company. Occasionally, however, if the proper dosage is not available, it must be repackaged according to the need. Injectable medication is put in solution and sterilized in the hospital. Drugs must be properly packaged, labeled, and dated before delivery to the nursing staff.

The pharmacy department has the responsibility for keeping track of drug needs for every area of the hospital. Proper inventory and control procedures must be followed, especially with narcotics. Some drugs are very sensitive to light and temperature and must be properly stored to insure their effectiveness. Extensive records are kept by this department on all pharmacy operations--prescriptions filled, controlled drugs dispensed, drug purchases, inspections, and so on. Reports sent to the administration are used to evaluate pharmacy services and for budgetary purposes.

Providing drug information is increasingly important among the duties of this department. The role of pharmacists as drug information specialists has expanded as the field of pharmacology has become more complex. To prescribe and administer medication properly, the health care team must be knowledgeable about how drugs interact and their possible side effects. Education programs are conducted frequently for the hospital staff. New personnel must be taught the proper procedures for using and handling drugs. In teaching hospitals, pharmacists are involved in training, lecturing, or teaching courses in pharmacology. Some pharmacy departments publish regular drug information bulletins to keep the medical and nursing staffs informed and up-to-date.

Hospital pharmacy departments also provide vital emergency services. They must be ready to provide emergency medication or antidotes to treat drug-overdose or to counteract a poison. Hence, they must be knowledgeable about rare and unusual poisons as well as the more common.

Last but not least, drug-related research is often conducted in a hospital pharmacy department. Research activities are conducted to improve the usefulness of drugs, to determine effective dosages, and to develop new drugs, as well as ways of administering those drugs.

As you can see, this department participates actively in patient care.

Radiology Department

The radiology department uses X-rays and radioactive materials to aid in diagnosis and to treat disease. Highly sophisticated equipment is used in this department and must be operated by specially trained physicians and technicians.

X-rays enable a physician to "see" inside the body. While we commonly associate X-rays with broken bones, X-rays are also used to detect disease in other parts of the body. Sometimes, surgeons depend on X-ray pictures for specific information before operating. X-ray pictures must be carefully taken and developed in order for doctors to make accurate readings. Having to retake an X-ray would expose patients to unnecessary amounts of radiation.

Some patients go to the radiology department for treatment purposes. In this case, the X-rays themselves are used to treat diseases, such as cancer. The radiologist, with the assistance of technologists, determines the radiation dosage and treatment site. X-ray beams must be precisely directed to the diseased tissue; otherwise, healthy tissue may be needlessly injured.

A more recent and increasingly important section of the radiology department is nuclear medicine. Nuclear medicine technology uses radioactive substances to diagnose and treat disease. These substances may be injected into the bloodstream. The technologist then uses scanning and counting equipment to trace these substances. Based on where these substances are then distributed in the body, the radiologist determines the patient's condition. In other instances, tissue or blood samples may be taken from the patient and mixed with radioactive materials. How the cells react with the radioactive substance provides information for diagnosis.

A hospital radiology department might also include an ultrasound specialist. An ultrasound technician operates equipment which takes pictures of internal organs using ultrasonic waves. Ultrasound offers another method to observe internal organs and study organ malfunction. This new technology has enabled doctors to examine disorders of the unborn baby and even treat it while still in the womb.

A Rehabilitation Center

Imagine having to relearn all the common everyday tasks we take for granted--speaking, driving a car, getting dressed, or eating. The person who is disabled or handicapped, either by illness, injury, or birth defect, often has to face such a challenge. A rehabilitation hospital/center is a specialized facility which assists disabled persons to regain or develop the skills needed to live a more independent life. Some patients require constant care or more extensive medical services and are hospitalized. Many more persons require only certain types of therapies and can be cared for at home. These patients use rehabilitation facilities as outpatients and come for therapy daily or on a periodic basis.

A wide variety of services and therapies are offered at a rehabilitation center, ranging from instruction in daily living tasks such as shaving or getting into a car, to speech lessons, to fitting artificial limbs, to job placement services. The personnel who provide the services are trained specialists in their field. Each deals with a different aspect of the rehabilitation process.

Let's look at a person disabled by a stroke. Results of a stroke may leave one unable to speak and parts of the body paralyzed. This person may find him/herself unable to walk, dress or eat without help. Suddenly dependent on others, this person must gradually learn to do simple things all over again.

Perhaps one of the more difficult of tasks is regaining one's speech. The speech and hearing department of a rehabilitation center first determines the degree to which speech has been impaired. In addition to speaking, the patient's other communication skills--reading, writing, and hearing--may be evaluated. The speech therapist then designs a therapy plan and conducts the training.

To regain the use of paralyzed muscles, our stroke victim goes to the physical therapy department. Paralysis occurs when areas of the brain controlling muscle movements are damaged. Through physical therapy the stroke patient learns to use those muscles again, often by retraining other

parts of the brain to perform the function. Not all patients regain full use of their body and must learn to get about using braces or wheelchairs. Depending on the disability, therapy sessions may include exercise activities: using the whirlpool, in a wheelchair using bars and other equipment. Relearning basic mobility skills may also involve exercises in walking or climbing stairs.

Imagine the stress when an active, independent person becomes disabled. The stress can be reduced when one begins to do more for oneself. The occupational therapy department teaches disabled persons practical, everyday skills to restore muscle function and increase mobility. This is where our stroke victim may learn to dress or eat without help. Sometimes a person loses his/her ability to work in his/her former occupation. In this case, part of the occupational therapy program may involve training for a new vocation. The goal is to help the disabled gain new skills and self-confidence in order to achieve greater independence.

In preparing disabled persons for the world of work, the vocational rehabilitation department aids patients in adjusting to their disability and setting realistic goals. Depending on their needs, patients may receive vocational testing, evaluation, job placement services, job-seeking skills, counseling and other support services.

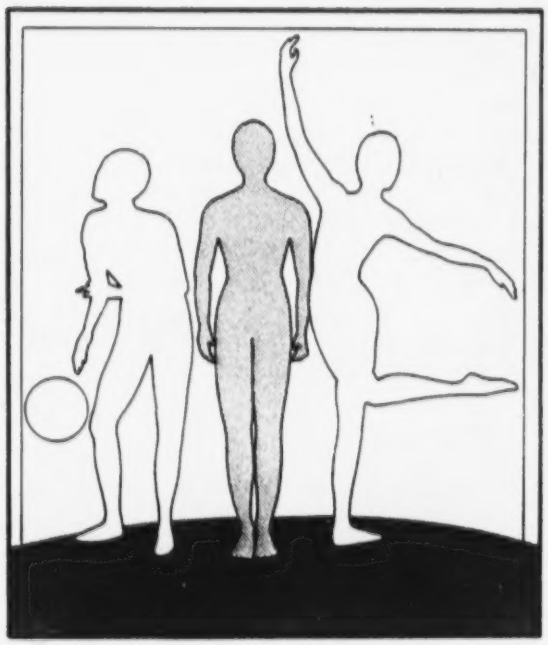
Learning to live at home again requires a variety of adjustments--some physical, some emotional. Keeping house from a wheelchair requires some different techniques. In addition, sections of the house may need to be modified, such as lowering the work counters in the kitchen. The rehabilitation center can recommend structural changes needed in the home to help ensure safety while permitting maximum mobility.

Everyone knows how important it is to have shoes that fit well. It is no different to a person suffering the loss of a limb to have the new arm or leg fit well. Some larger rehabilitation hospitals may have a prosthetics and orthotics department on their premises. Here artificial limbs are designed, made and fitted, along with braces and other support devices.

A rehabilitation center serves many different types of patients. In addition to the stroke victim, a teenage athlete may need to strengthen injured leg muscles. A child born disabled may be taught how to walk. An accident victim may need therapy to relieve pain. A person who has suffered loss of a limb may need to learn how to use the replacement limb. Someone suffering from severe spinal injury may need counseling to adjust to life in a wheelchair.

The services and therapies available at a rehabilitation facility are as varied as the needs of each individual.

A Stay Well Center



Americans are growing more aware that good health is not merely the absence of illness. We now realize that keeping our body fit will lead to a happier, longer life. Health clubs, health clinics, fitness/wellness centers, and so on are sprouting up throughout the country at a rapid pace. Also, companies are finding that healthy employees work more effectively and have fewer sick days. In the long run, both employer and employee benefit. Larger companies are now developing wellness programs that often include gym and exercise facilities at the workplace.

Wellness programs are based on the idea that keeping the body healthy includes balanced foods, exercise, adequate rest and learning to control stress. Because each person is different and has different needs, programs need to be tailored for the individual client. The staff first determines an individual's overall health, personal habits and family history before creating an exercise and health program best suited for that person. Participants then learn from fitness instructors appropriate exercises and the proper use of exercise equipment. In addition, the centers offer lectures and courses that deal with nutrition, weight control, ways of coping with stress, ending the smoking habit, and home safety.

As fitness/wellness centers grow in popularity, preventive health care professionals will find an increasing need for their services at commercial centers, YMCAs, hospitals, universities and in larger corporations. Staffing will vary with the types of programs offered, but a center may typically include the following staff:

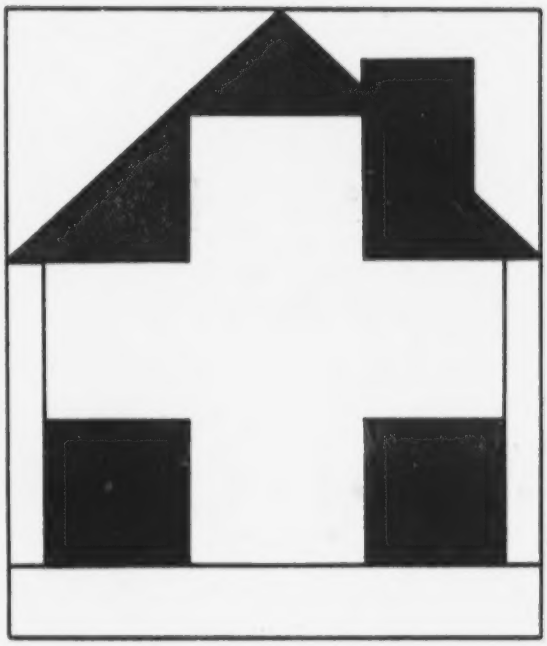
MEDICAL DOCTORS

PHYSICAL THERAPISTS
or
PHYSICAL EDUCATION INSTRUCTORS

PSYCHOLOGISTS

NUTRITIONISTS

An Extended Care Facility



During the past few decades, the age of the population and the structure of the American family has undergone many changes. People are now living longer. The extended family (parents, children and other relatives all living under one roof) was common not so long ago. Today family units are smaller and may live great distances from their close relatives.

Where once family members took care of each other, particularly their elderly, this is not always possible any more. In families where both husband and wife work, it becomes especially difficult to care for sick or convalescing elders. While many older people are very active and are able to live independently (e.g., maintaining their own home and working beyond the retirement age of 65), many are less able to do so because of illness or disabilities brought about by the aging process.

Aging often brings on its own set of problems. Many elderly struggle financially, suffer failing health, or face the loss of a spouse. These things often happen together, increasing the elderly's dependence on others. With the growing number of elderly persons, there is an increasing need for physicians, health care personnel, and social service workers who can meet the special needs of this group. There is also an increased demand for medical and nursing care outside of hospitals. Nursing homes serve an important function in the care of the aged and have rapidly grown in number.

Nursing homes vary in their facilities and the services they provide. Many operate much as a hospital, with physicians and other medical personnel on staff. In such facilities, nursing care is the primary function. Medical services on a 24-hour basis are available to those who are chronically ill or who require constant attention.

Other nursing homes are geared more to personal care of the elderly who are not critically ill or severely incapacitated. Personal care services may range from help in bathing, dressing, eating and walking, to help in correspondence and shopping. Medical needs may be minimal, occasional medications or treatment of minor ailments according to doctor's orders.

Whatever the scope of activities of a particular nursing home, it must be kept in mind that basic human needs do not change just because one ages. People continue to seek companionship and the warmth and love of others. The desire for independence--the need to do things for oneself--does not lessen with age. What does change is one's ability to fulfill those needs.

Companionship becomes more difficult as many elderly are left widowed or unable to get around. The ability to be independent may change with the onset of disease. A fall may disable a person, making walking difficult or impossible. A stroke may take away the use of certain muscles, perhaps affecting one's ability to move as well as to speak. Hearing loss is also very common in the aging process.

Nursing homes attend to the psychological needs behind the physical limitations of the elderly. They strive to provide services and programs designed to encourage independence and enjoyment of life.

The therapeutic services available in a nursing home vary with the institution and patient needs. More commonly offered are physical and occupational therapy, and speech and hearing therapy. Physical therapy helps the elderly patient regain the use of muscles weakened by illness or injury. Occupational therapy helps persons regain independence in dressing, eating, or doing other things for themselves. Speech and hearing therapy is of prime importance in enabling patients to communicate, given their disabilities.

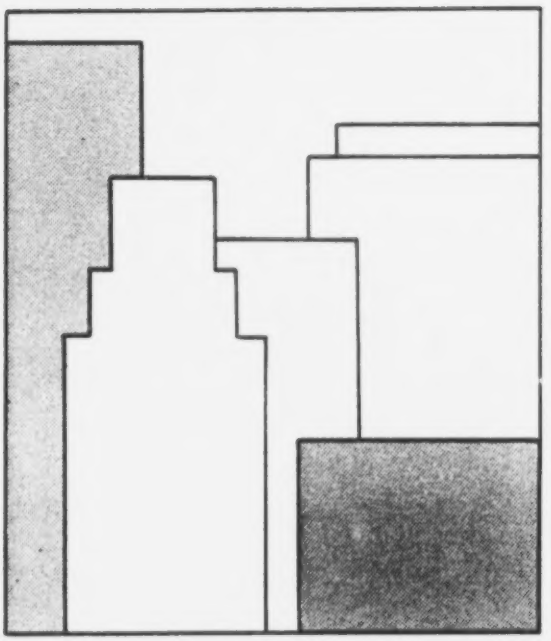
Nursing homes frequently employ the services of a music or art therapist. Music and art activities have been found to be important forms of therapy for social or emotional problems in addition to providing interesting recreation. Recreational programs are planned with the special needs of the residents in mind. Programs include movies, music or art events, exercise classes, and arts and crafts classes. Social events in nursing homes bring the residents together, providing both therapeutic benefits and opportunities to socialize.

Many elderly have a reputation for being quarrelsome or ill-natured. Very often, poor diet or reaction to medication is the reason. Nursing homes need also to address the special dietary needs of the elderly. Dietitians play an important role in these matters.

With an expanding elderly population, facilities to meet the needs of this group are increasing. Facilities such as nursing homes require the services of a diverse staff of trained personnel. As indicated, geriatrics is a rapidly growing specialty, since serving the elderly depends on knowledge about the unique problems of aging. Personnel required to serve the geriatric population in nursing homes range from doctors, nurses, the primary care team, to therapists, dietitians, and geriatric aides as well as the support staff that includes cooks, housekeepers and administrative and clerical personnel.

A Dental Center

Dentists have typically practiced as solo practioners or as a small group with two or three other dentists. More recently larger dental centers and dental groups have appeared on the dental care scene. Dental centers offer full dental services that can meet the needs of the entire family. Dentists trained in general dentistry or in the different specialties--orthodontics, pedodontics, prosthodontics, etc.--provide services under one roof. By practicing as a larger group, such as 20 or more, the dentists share many of the resources, equipment and office personnel and can offer dental care at lower costs. Dental laboratory facilities are also on the premises so certain types of work can be completed during the same visit.



For many dentists, this type of group practice has several advantages. Dentists do not have to assume the entire burden of purchasing the equipment, an important consideration since sophisticated dental instruments are so very expensive. Hours can be more regular when dentists can take turns in covering emergency cases. The responsibility of responding to emergencies is not left to one dentist. When dentists practice alone they are more involved in managing the office. Whereas, in a large group, a professional manager is employed to supervise the office activities. Dentists can therefore devote more time to the actual practice of dentistry and less to office details. They also have more specialized assistants and technicians to perform different functions and are freed from some of the more routine activities.

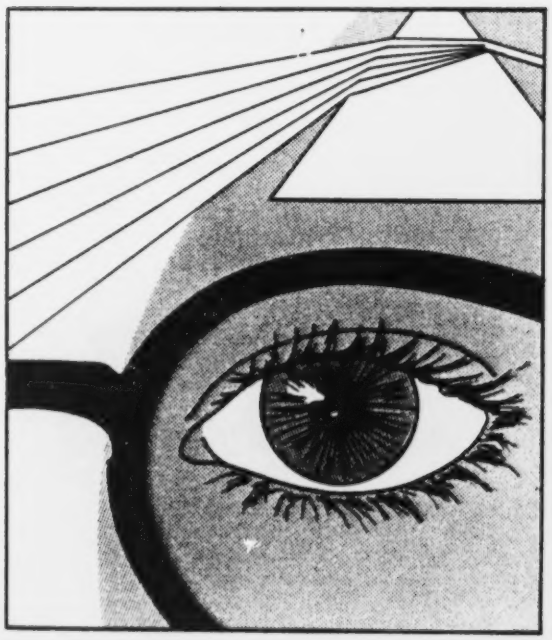
For the patient, this type of center can save time and travel. One need not go first to a general dentist who makes a diagnosis and then travel to a specialist who then performs the work, such as oral surgery. With one stop at the dental center, all dental needs can be covered. Families find this particularly efficient, since all members can be treated at once. Moreover, because several dentists are on staff, the center can offer office hours in the evenings or even weekends.

When patients first come to the center they are seen by the diagnosing dentists who perform the initial examination and determine the treatment needs. Patients are then assigned a dentist who specializes in a particular

area; a teenager needing braces will see the orthodontist; a person who has lost a tooth will see the prosthodontist.

Where a typical solo practice dentist may employ only a dental assistant and a dental hygienist, dental centers will employ a larger number of different allied dental workers and administrative personnel. Among the administrative personnel are office managers, appointment secretaries, insurance processors, receptionists, financial coordinators, bookkeepers and computer specialists. The duties of dental assistants are more specialized. Some may work only with new patients, explaining the procedures, establishing the records, and taking the X-rays. Other dental assistants may only assist dentists as they work. Dental hygienists, sterilization technicians, and dental laboratory technicians are other personnel employed at these centers.

A Vision Center

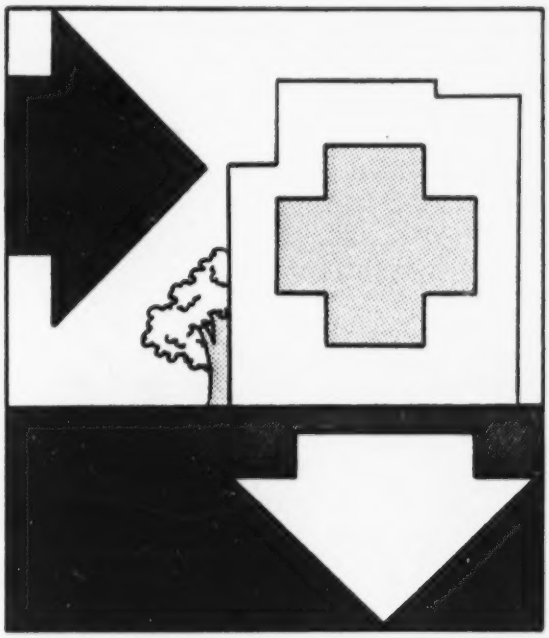


In more highly populated areas we are seeing a trend towards large centers that offer specialized health care services under one roof. This is also the case with eye care. Typically, when we need corrective lenses we visit the optometrist who tests our vision, writes and orders the prescriptions, and fits us with eyeglasses or contact lenses. Or, we visit the ophthalmologist who conducts the examination and writes the prescription which we then take to the optician. Optometry and opticianry establishments are, for the most part, operated by one or two persons who order the lenses from an optical laboratory. More recently, large scale, department store type eyewear establishments have appeared on the scene.

A vision center or eyewear department store houses the full complement of eyecare services (except that of an opthalmologist). Like a department store, with one stop and a short wait, our eyes are tested and lenses are immediately made. These vision centers differ from the more common optical dispensing establishments in that they have their own optical laboratory with complete lens making facilities. Lenses are made right in the same building. This reduces the time between ordering the prescription and when we receive the finished products. Because of their size, vision centers are able to offer a much wider selection of frames, a special attraction to fashion conscious eyeglass wearers. Establishments of this type are responding to segments of the American public who desire more choices, faster service, and greater economy.

Providing the services at these vision centers are a staff of optometrists, opticians, optical laboratory technicians, and sales clerks. Like personnel in larger organizations, their activities are more compartmentalized. Here optometrists will do only the eye examinations, while the dispensing opticians will make the measurements for the eyeglasses and do the fitting. Some opticians may even specialize in helping children select frames and assist them in adjusting to wearing eyeglasses. Others may specialized in fitting contact lenses.

A Health Maintenance Organization



Health Maintenance Organizations (HMOs) are based on the concept of health care paid in advance (up until the 1970's, the term "prepaid group practice" was used). While the federal government has long applied this concept in providing health services to seamen and members of the armed services, HMOs have gained wider acceptance and grown rapidly only the past decade.

One of the earliest and largest HMO is the Kaiser-Permanente system, established in the 1930's for employees of the Kaiser Company. It enabled workers to obtain health care at affordable costs during difficult economic times. Later, during the war years, when health care professionals were scarce, it proved to be an efficient system for health care delivery. Its membership has now exceeded 3.5 million, and it has health facilities in six states. This HMO is one of the several types of HMO organizations that have since emerged.

HMOs differ from health insurance plans in that they directly provide health services--from medical treatment to hospitalization care. That is, HMOs can offer their members complete health care facilities and all the special services associated with recovery from illness or injury. Insurance plans, on the other hand, only pay for the services received but do not provide these services. For a fixed fee (usually paid on a monthly basis), subscribers are eligible to use the HMO facilities for routine checkups, treatment of illness, or hospitalization if needed. Since they deliver complete health services, HMOs facilities will include physicians' offices, ambulance units, outpatient clinics, hospitals, pharmacies, clinical laboratories, emergency departments and rehabilitation centers. Some HMOs also offer eyewear facilities and dental services.

Health care personnel who work in an HMO hospital or clinic will find their work no different from any other similar health care facility. What differs is in how the system is managed and funded. Different HMOs are also organized along different models. In some HMOs, the physicians are paid employees of the organization. In other HMOs, the organization arranges with a group of physicians and health professionals to provide the medical services. A third type contracts for services from different sources. In this type, physicians practice in their own private office serving their own

patients as well as HMO subscribers. HMOs are sponsored by various groups--physicians, hospitals, clinics, insurance companies, labor unions, consumer groups, medical schools, medical societies, government groups, and so on.

HMOs have offered the public another system to meet its health care needs and are expected to grow in popularity and numbers. Because they agree to provide their subscribers with comprehensive health care and since major hospitalization is expensive, greater emphasis is placed on preventive medicine and health education. Consequently, they pay prompt attention to patients' symptoms and try to diagnose and treat illnesses early to prevent more serious complications. HMOs are influencing and bringing about new methods for servicing the public. They will play a major role in improving the quality of health care while keeping the costs lower. As the HMO trend grows, it is expected that we will see more health care personnel working in centers where many services and specialties are housed together. Personnel will work more closely as part of a total health care team. Stressing the preventive aspect of health care, HMOs will no doubt employ more people trained in the allied health professions such as health education, counseling, nutrition and so on.

III. Occupations and Occupation Descriptions:

. type of work . work opportunities
. special skills/interest . education

1. Clinical Laboratory Services

Cytotechnologist

Histologic Technician

Medical Laboratory Assistant

Medical Laboratory Technician

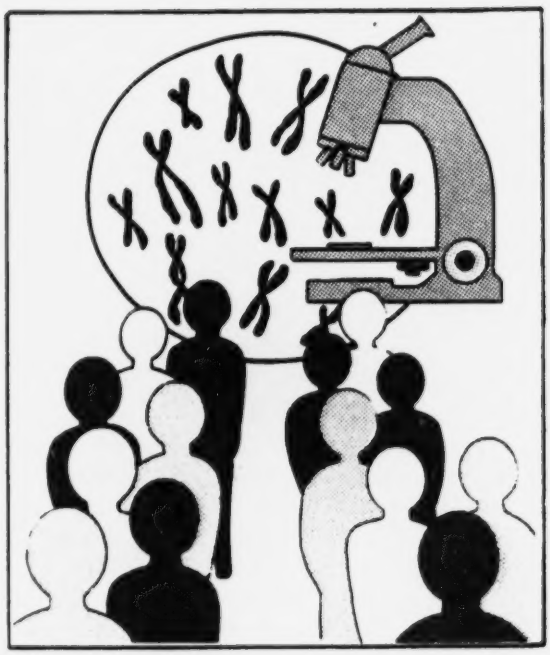
Medical Technologist
(Clinical Laboratory Scientist)

Nuclear Medical Technologist

1. Clinical Laboratory Services

Cytotechnologist

078.281-010



Cells from each type of organ tissue have a characteristic size, shape, color and structure. When cells deviate from the normal pattern, the disease of cancer is often suspected. Cytotechnologists examine tissue, looking for possible cancer producing cells. They prepare and stain slides of body cells with dyes and examine the preparation under a microscope. Cytotechnologists do the initial screening of the cells. Those cells showing abnormalities are then examined by the pathologist who interprets the findings. Frequently, to confirm the diagnosis, the cells must be tested using other procedures which are also performed by the cytotechnologist. Examination of cells in these ways has made it possible to detect disease before symptoms are evident. When treatment is started early, the disease can be more easily arrested.

Personal Qualifications and Training

The exacting work of a cytotechnologist requires concentration, patience, and care to details. One should have good spatial perception and color vision. High school preparation should include courses in biology and chemistry. Persons may enter a cytotechnology program after two years of college. Courses in college should have a strong biological science emphasis. The cytotechnology training program is one year in length and is given at hospital or medical schools. Formal classroom courses are conducted during the first six months while practical laboratory training is given during the remaining months. Cytotechnologists who pass the certification exam are certified by the American Society of Clinical Pathologists.

Outlook

The public's awareness of the value of screening tests to detect early signs of cancer will continue to expand job opportunities in the field. While the Pap test for cervical cancer is one of the main screening tests performed by cytotechnologists, new screening tests for other types of cancers using other tissue cells will increase the demand for trained personnel.

Areas of Employment

- hospitals
- commercial medical laboratories
- cancer research institutes
- pharmaceutical companies

Schools in New Jersey

Muhlenberg Hospital
Plainfield, New Jersey 07061

UMDNJ - School of Allied Health Professions
Newark, New Jersey 07103

For Additional Information

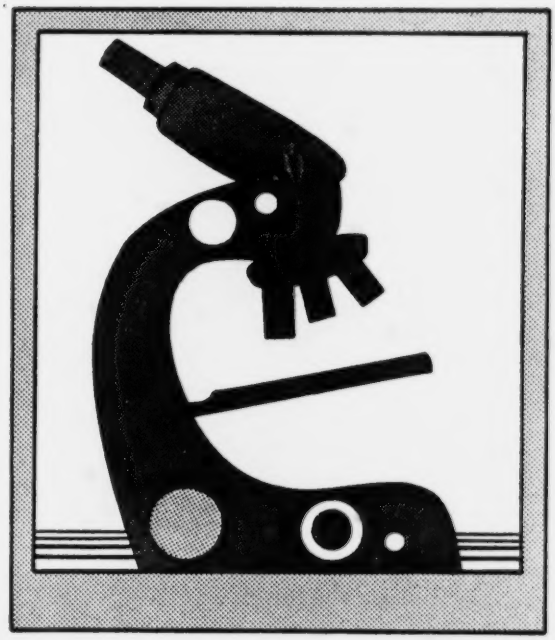
American Society for Clinical Pathologists
P.O. Box 4872
Chicago, Illinois 60614

American Society of Cytology
130 South 9th Street
Philadelphia, Pennsylvania 19107

1. Clinical Laboratory Services

Histologic Technician

078.381-014



In order to examine body cells microscopically, tissue from the organ must be cut very thinly and stained so that different parts of the cell are highlighted. Histologic technicians prepare the tissue samples for the pathologist to study. The appearances of the cell and its structure offers information for the diagnosis of disease.

Very frequently the cutting, mounting, and staining of a specimen is performed while a patient is still on the operating table. In such situations, the histologic technician must work quickly and accurately so that the pathologist can provide an immediate report to the waiting surgeons.

Personal Qualifications and Training

Since histologic technicians work with delicate, minute amounts of materials, they must possess good manual dexterity, keen spatial and color vision and patience. Attention to detail, neatness and accuracy are also important traits. High school courses should include biology, chemistry and algebra. Most training programs are one year in length and are offered by hospital schools. In the near future, some of the formal course work may be given at community colleges. Graduates from accredited programs may take the certification examination given by the American Association of Clinical Pathologists.

Outlook

There is a good demand for skilled technicians in this area. Although this is not a large profession, the numbers will increase as more people use medical services and need lab tests that rely on tissue specimens.

Areas of Employment

- hospitals
- commercial medical laboratories
- clinics
- research laboratories

Schools in New Jersey

Mountainside Hospital
Montclair, New Jersey 07042

Muhlenberg Hospital
Plainfield, New Jersey 07601

Newcomb Hospital
Vineland, New Jersey 08360

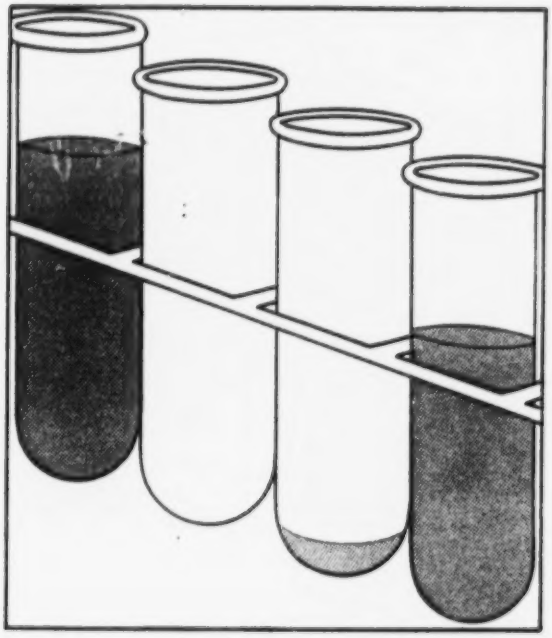
For Additional Information

American Society of Clinical
Pathologists
P.O. Box 4872
Chicago, Illinois 60612

1. Clinical Laboratory Services

Medical Laboratory Assistant

078.381-010



Medical laboratory assistants are trained to perform a variety of routine laboratory procedures. They conduct tests such as urinalysis, blood typing, blood serum chemistry, tissue staining, etc. Other work includes setting up equipment, preparing solutions, sterilizing materials, keeping records and organizing the work area. They are supervised by a medical technologist or physician. Although the work requires specialized skills, an in-depth understanding of the scientific principles is not necessary.

Personal Qualifications and Training

Similar to other clinical laboratory personnel, one must be able to perform delicate precision work that requires good eye and hand coordination. Neatness, careful attention to detail, and accuracy are also important qualities. Science and math courses in high school are recommended preparation. A high school diploma (and sometimes biology, chemistry and algebra) is prerequisite for entry into a formal training program. Most are approximately a year in length and are usually offered by hospital schools. It is preferable to obtain one's training from a certified laboratory assistant's school. Training is also available through the Armed Forces. Graduates from accredited programs who pass the certifying exam are certified by the American Society of Clinical Pathologists.

Outlook

The demand for laboratory workers remains high. Since many tests are based on straightforward procedures, they can be performed by trained assistants and technicians. Although clinical laboratories require a medical technologist to supervise the work and check the consistency of test results, it is expected that laboratories will hire a larger proportion of assistants and technicians to conduct the routine testing.

With additional experience and formal college coursework, a medical laboratory assistant may advance to the next level position--medical laboratory technician.

Schools in New Jersey

Camden County Area Vocational
Technical School
Sicklerville, New Jersey 08081

Community Memorial Hospital
Toms River, New Jersey 08753

Newcomb Hospital
Vineland, New Jersey 08360

Riverside Hospital
Boonton, New Jersey 07065

Warren Hospital
Phillipsburg, New Jersey 08865

For Areas of Employment and Additional Information,
see MEDICAL LABORATORY TECHNICIAN

1. Clinical Laboratory Services

Medical Laboratory Technician

078.381-014

Medical Laboratory Technicians (MLTs) work under the supervision of medical technologists, performing the variety of laboratory tests necessary in the diagnosis of diseases. The duties vary with the size of the laboratory. In smaller labs MLTs may run a wide range of tests--chemical, bacteriologic, blood typing, microscopic and so on. In larger labs MLTs may specialize in a particular section. They use precision instruments in performing many of the tests, including microscopes, centrifuges, incubators, electronic counters, spectrophometers, etc. In hospitals, MLTs may also have contact with patients when they obtain the necessary specimens for testing, such as blood, urine, and cultures.

Personal Qualifications and Training

Work in this area requires a high level of precision and accuracy. One should be alert to details, have good eyesight, and work well with one's hands. A good high school background in biology, chemistry and mathematics is highly desirable. Formal training is offered by community colleges and technical schools which confer an associate degree or certificate. Graduates from accredited programs may take a certification exam given by the American Society of Clinical Pathologists. Training is also available through the Armed Forces.

Outlook

There is a growing trend to employ MLTs to perform the bulk of the testing, allowing medical technologists to attend to supervisory, research, and managerial duties. Also, the increased use of automated equipment and advanced instrumentation have reduced the requirement of higher level technological knowledge to perform many of the tests and analyses. The job opportunities in this field continue to be favorable as lab tests play a dominant role in diagnosis and treatment.

Areas of Employment

- hospitals
- commerical medical laboratories
- public health agencies
- clinics
- pharmaceutical firms
- research laboratories

Schools in New Jersey

Atlantic Community College
Mays Landing, New Jersey 08330

Bergen Community College
Paramus, New Jersey 07652

Brookdale Community College
Lincroft, New Jersey 07738

Burlington County College
Pemberton, New Jersey 08068

Camden County College
Blackwood, New Jersey 08012

County College of Morris
Dover, New Jersey 07801

Felician College
Lodi, New Jersey 07644

Greater Paterson General Hospital
Wayne, New Jersey 07470

Institute for the Advancement of Medical Science
Cherry Hill Medical Center
Cherry Hill, New Jersey 08034

Lyons Institute
Cherry Hill, New Jersey 08034

Mercer County Community College
Trenton, New Jersey 08690

Middlesex County College
Edison, New Jersey 08817

St. Barnabas Medical Center
Livingston, New Jersey 07039

St. Francis Medical Center
Trenton, New Jersey 07302

Union County Technical Institute
Scotch Plains, New Jersey 07076

For Additional Information

American Society of Clinical Pathologists
P.O. Box 4872
Chicago, Illinois 60612

1. Clinical Laboratory Services

Medical Technologist
(Clinical Laboratory Scientist)
078.361-014

Diagnosis of disease and following the effects of the treatment depend to a large extent on laboratory tests. Sometimes different diseases may have similar symptoms but require totally different treatments. Or outward symptoms of a disease are so vague that the physician cannot determine its cause. Laboratory tests help to confirm diagnosis or provide clues to guide further investigation. Frequently a large battery of tests is necessary because various information must be pieced together in order to pinpoint the nature of the disease. Making a diagnosis is similar to putting together a puzzle, and lab tests are some of the pieces that help create the total picture. Results from lab tests help physicians select the proper treatment, answering such questions as: "Will the organism causing the infection be affected by the drug?" "What is the necessary dosage?"

Many different types of tests are performed in the clinical laboratory. Tissue may be examined microscopically to detect abnormal growth of cells such as in cancers. Chemical tests may be performed on blood or spinal fluid to check for unnatural amounts of a substance. Samples of materials from patients may be cultured to isolate and identify the bacteria causing the disease. Some tests require the use of complex and sophisticated detection equipment, while others require the keen observational skills of the trained personnel.

A medical technologist (MT), working under the supervision of a clinical pathologist, is trained to performed the wide range of activities of a clinical laboratory. Large hospital laboratories may have several distinct departments: immunology, biochemistry, hematology, histology, microbiology. Medical technologists may specialize in one of these areas, supervising other technical personnel and performing duties that require their experienced judgment. MTs with work experience in specialized areas may gain an additional certification as: Technologist in Chemistry; Technologist in Hematology; Technologist in Immunology; Technologist in Microbiology, or Technologist in Nuclear Medicine.

Specialists perform more complex procedures, conduct research, supervise other laboratory personnel and teach. They often hold masters' or doctorate degrees in their specialty.

Personal Qualifications and Training

As applied scientists, MTs should have an aptitude for the sciences and mathematics as well as possess an inquisitive mind. Good perception and manual dexterity are required because delicate, precision instruments are used and tests must be performed with great accuracy. (Errors can result in misdiagnosis and endanger the patient.) High school preparation should include biology, chemistry, and mathematics. MTs are usually trained in four-year MT programs that include three years of prerequisite college courses and one year of clinical training, leading to a BS degree. Or, a

person may enter a clinical training program after completing a bachelor's degree in one of the related science areas. Certification examinations are given by the American Society of Clinical Pathologists and the International Society for Clinical Laboratory Technology.

Outlook

As more people utilize health care services, the number of laboratory tests performed also increases. Hence, job opportunities for medical technologists are good. Nonetheless, there may be a number of factors that could create a greater competition in the job market: 1) the large number of programs graduating medical technologists; 2) the use of automated and electronic equipment to perform tests; 3) the high cost of medical services may induce doctors to be more selective in the tests they order; and 4) the increased employment of technicians to perform the more routine tests.

Areas of Employment

- hospitals
- commercial medical laboratories
- public health agencies
- clinics
- pharmaceutical firms
- research laboratories
- medical schools

Schools in New Jersey

Caldwell College
Caldwell, New Jersey 07006

Centenary College for Women
Hackettstown, New Jersey 07840

Fairleigh Dickinson University
Rutherford, New Jersey 07070 and
Teaneck, New Jersey 07666

Kean College
Union, New Jersey 07083

Monmouth College
West Long Branch,
New Jersey 07764

Rutgers - The State University
of New Jersey

College of Arts and Sciences
Newark, New Jersey 07102 and
Camden, New Jersey 08102

Douglass College,
New Brunswick, New Jersey 08903

Livingston College
New Brunswick, New Jersey 08903

For Additional Information

American Society for Medical Technologists
330 Meadow Fern Drive
Houston, Texas 77067

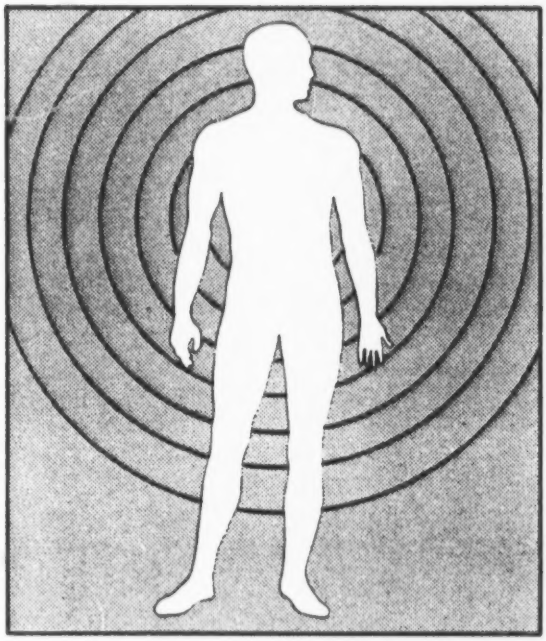
American Society for Clinical Pathologists
P.O. Box 4872
Chicago, Illinois 60612

International Society for Clinical Laboratory Technology
818 Olive Street
St. Louis, Missouri 63101

1. Clinical Laboratory Services

Nuclear Medical Technologist

078.361-018



Nuclear medicine is among one of the newest, fastest growing areas in the medical technology field. This is a specialized science which uses nuclear materials in diagnosing and treating disease. For the purpose of diagnosis, radioactive materials are injected into patients or mixed with cells in a test tube. How these materials react with body organs, tissues, or cells provides information about the patient's condition. Information is obtained using advanced radioactive detecting equipment such as Geiger counters, scintillation and positron scanners, electroscopes and cameras, as well as computers.

Nuclear medical technologists perform a variety of tests using radioactive materials under the supervision of a physician. They prepare the materials, administer them to patients, operate the equipment, analyze the data and write the reports. Since the materials are potentially hazardous, nuclear medical technologists must be extremely diligent in calculating correct dosages and properly administering them to patients. The regulations for handling and disposing of the materials must be followed carefully to protect personnel and patients from unnecessary exposure to radioactivity. Work in this area involves both laboratory activities and directly servicing patients.

As nuclear medicine technology is a rapidly developing diagnostic tool, technologists must constantly keep up-to-date on new tests and procedures. To understand and apply the technology one must be knowledgeable in biology, chemistry, and physics, as well as statistics and nuclear and electronic instrumentation.

Personal Qualifications and Training

An interest and ability in science and mathematics are important, as are skills in problem solving and manual dexterity. Training is a one or two year program. To be eligible for training one must have at least two years of college, but preferably a BS degree in the sciences, or be qualified as a registered nurse, medical technologist or radiologic technologist. Training programs are offered by hospitals, community colleges, colleges, universities and medical schools.

Outlook

As this is a relatively new and rapidly expanding field, there is currently a lack of trained technologists to fill the available positions. With more training programs being established, the demand may gradually ease. Currently, many nuclear medical technologists are not trained under formal programs. However, as licensing requirements are established, these technologists may need to return to school for further education.

Areas of Employment

- hospitals
- research institutes
- physician's offices

Schools in New Jersey

John F. Kennedy Medical Center
Edison, New Jersey 08818

Rutgers - The State University
Livingston College
New Brunswick, New Jersey 08903

For Additional Information

Society of Nuclear Medicine
475 Park Avenue, South
New York, New York 10016

Society of Nuclear Medicine
Technologists
1201 Waukegan Road
Glenview, Illinois 60025

2. Dental Services

Dentist

Oral Pathologist

Endodontist

Oral Surgeon

Orthodontist

Pedodontist

Periodontist

Prosthodontist

Public Health Dentist

Dental Assistant

Dental Hygienist

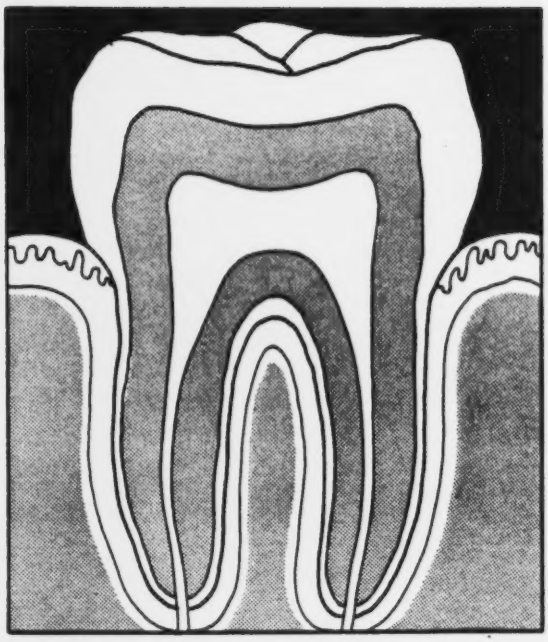
Dental Laboratory Technician

2. Dental Services

072.101-010 Dentist
072.061-010 Oral Pathologist
072.101-014 Endodontist
072.101-018 Oral Surgeon
072.101-022 Orthodontist
072.101-026 Pedodontist
072.101-030 Periodontist
072.101-034 Prosthodontist
072.101-038 Public Health Dentist

When we speak of dentistry, what probably first comes to mind is the general practice dentist whom we see for our regular checkups, cleanings, and fillings. While the treatment of oral diseases and disorders, providing artificial replacements, and preventive care continues to be primary activities of dentists, we are seeing new trends in the delivery of dental services. In order to provide dental care to more people, dentists are joining group practices and health maintenance organizations or practice community dentistry. Also, they are relying to a greater extent on allied dental personnel (dental assistants, dental hygienists and dental technicians) to perform a number of tasks.

Research efforts have brought about new scientific advances which enable dentists to offer more effective (and perhaps less stressful) treatment. New knowledge has brought about greater understanding of and techniques for dental disease prevention. There is a growing emphasis on viewing dental care as part of a person's entire well being. That is, a stronger relationship is developing between dentistry and other branches of medicine.



New areas of specialization have emerged. The following descriptions of dental specialties indicate the level of sophistication in this field, as well as the diverse career opportunities in different settings. Nonetheless, the great majority, nearly 90% of dentists, are in general practice.

Endodentists treat dental problems that arise from diseases or defects of the gum tissue. A root canal is one of the more common surgical techniques associated with this specialty. Other activities may include surgical removal of disease tissue, treating gum injuries, realigning displaced teeth, or reinserting lost teeth.

Oral Pathologists are concerned with the causes and processes of diseases of the mouth area. They perform chemical, microscopic, and radiographic tests on tissue samples to provide diagnostic information. This information is used by the patient's dentist or physician for treating disease or correcting teeth, gum, or jaw abnormalities.

Oral Surgeons perform operations in the mouth area as needed in the treatment of disease, injuries, and defects. Dentists send patients to oral surgeons for more complicated tooth extractions or multiple extractions. Other types of surgery include removal of tumors, correcting jaw alignment problems, and preparing the mouth for dentures.

Orthodontists diagnose and correct mouth and teeth irregularities that require movement of teeth and restoring a proper balance of the mouth structures. Braces are, of course, most commonly associated with the work of orthodontists. They also fabricate other types of appliances required in the repositioning of teeth. Orthodontics is the largest of the specialties.

Pedodontists specialize in treating children. Since children's teeth are in the continuous process of change and growth, their dental problems and needs are somewhat different than those of adults. For example, when special appliances are required, the pedodontist must take into account the rate of jaw and teeth changes.

Periodontists diagnose and treat diseases of tissues surrounding the teeth and underlying bone. A variety of treatment procedures that include minor surgery are employed to restore and maintain the healthy function of these tissues.

Prosthodontists restore natural teeth or replace missing teeth with artificial substitutes. When replacement parts are made, the prosthodontist must carefully take into account the patient's total jaw and facial characteristics. Patients' improved speech, chewing, and appearance are the outcomes of the work.

Public Health Dentists work for public health agencies and are concerned with the overall dental health of the community. They plan, organize, and maintain dental health programs. Programs may include dental clinic services; dental hygiene instruction to school and adult groups; analysis of dental needs of the community; and prevention and control of dental disease.

Personal Qualifications and Training

Dentistry is both an art and a science, requiring high levels of both intellectual abilities and visual abilities. Skill in use of one's hands, judging space and shape, and good visual memory are needed in restoring and replacing teeth. Proper diagnoses depend on applying technical knowledge in problem solving. Interest in people and in helping others is also important.

Since competition is keen for the available places in dental schools, good preparation is important. High school courses should include biology, chemistry, mathematics and health. Two or four years of college is a prerequisite for entrance into dental school. The majority of dental students have their bachelor's degree. Dental programs are four years in length and award DDS or DMD degrees. Graduates must pass a licensing exam in order to practice. To practice in one of the eight specialty areas, an additional two to three years of education and clinical training is required.

Outlook

Population growth, an older population, federal health care programs, dental insurance plans, and a public better informed about dental health all contribute to a high demand for dental services. There is a shortage of dentists to service the needs of the public, especially in lower income areas. Most dentists starting out open their own offices, purchase an established practice, or work with a practicing dentist. The high cost of equipping an office is one of the hurdles facing dentists entering private practice. However, private practice dentists have the independence of being their own employer, and the financial rewards of a well-established practice are high.

The increase in public health programs have created new opportunities for work in health agencies and clinics where dentists administer programs or practice dentistry.

Teaching at dental schools and research are other opportunities for dentists.

Areas of Employment

- private practice
- group practice
- health maintenance organizations
- hospitals
- clinics
- community health agencies
- dental schools
- Armed Forces

Schools in New Jersey

Fairleigh Dickinson University
Hackensack, New Jersey 07601

UMDNJ - New Jersey Dental School
Newark, New Jersey 07103

For Additional Information

American Dental Association
211 East Chicago Avenue
Chicago, Illinois 60611

2. Dental Services

Dental Assistant

079.371-010

Dental assistants, as the title implies, assist dentists during the treatment of patients. They prepare the patient for examination and subsequent dental procedures. As the dentist works, they select and pass the necessary instruments and materials. They help keep the mouth area cleared and dry, so that the dentist can put in the fillings or perform other dental work. Dental assistants also prepare solutions and mix materials for fillings and cement. Other activities may include helping the dentist take and develop X-rays, sterilizing instruments, and keeping the treatment area stocked and organized. Their assistance enables the dentist to work more effectively and efficiently. They are, in essence, the dentist's extra "hands" and "eyes."

In smaller dental practices, dental assistants may also perform secretarial duties such as making appointments, keeping records, and billing patients.

Personal Qualifications and Training

A pleasing personality, working well with people, alertness and good manual dexterity are all important qualities for this occupation. Since the dental assistant and dentist function as a team, one must be well organized and able to anticipate activities to be performed. While many dental assistants have been trained on the job, more and more are now trained in formal school programs. One reason is that they now perform many tasks formerly done by dental hygienists and dentists. Recommended high school courses include biology, health, chemistry, typing and office management. One- and two-year training programs are offered by vocational-technical schools, community colleges and dental schools. Diplomas, certificates or associate degrees are granted, depending on the program. Training is also available through the Armed Forces. Dental assistants who meet the educational requirement and pass the exam are certified by the American Dental Assistants Association.

Outlook

Opportunities for dental assistants, especially those with formal training, are very good. Many people now have dental insurance plans or receive dental services through public programs and therefore are more inclined to use dental services. The public has also recognized the importance of regular dental check-ups. The high demand for dental services therefore increases the need for dental assistants.

Areas of Employment

- dentists' offices
- dental group practices
- hospitals
- public health departments
- dental clinics
- dental schools

Schools in New Jersey

Atlantic County Area Vocational/
Technical School
Atlantic City, New Jersey 08401

Bayonne High School
Bayonne, New Jersey 07002

Bergen Community College
Paramus, New Jersey 07652

Bergen County Area Vocational/
Technical School
Hackensack, New Jersey 07601 and
Paramus, New Jersey 07652

Bryman School
East Brunswick, New Jersey 08816

Camden County Area Vocational/
Technical School
Sicklerville, New Jersey 08081

Camden County College
Blackwood, New Jersey 08012

Cape May County Area Vocational/
Technical School
Cape May Court House, New Jersey
08210

UMDNJ - School of Allied Health
Professions
Newark, New Jersey 07103

County College of Morris
Dover, New Jersey

Essex County Area Vocational/
Technical School
Newark, New Jersey 07017

Gloucester County Area Vocational/
Technical School
Sewell, New Jersey 08080

Hudson County Area Vocational/
Technical School
North Bergen, New Jersey 07047

Kearny High School
Kearny, New Jersey 07032

Lyons Institute
Cherry Hill, New Jersey 08034

Mercer County Community College
Trenton, New Jersey 08690

Middlesex County College
Edison, New Jersey 08817

Monmouth County Area Vocational/
Technical School
Hazlet, New Jersey 07730 and
Neptune, New Jersey 07753

Ocean County Area Vocational/
Technical School
Bricktown, New Jersey 07823 and
Toms River, New Jersey 08753

Union County Technical Institute
Scotch Plains, New Jersey 07076

Union Township High School
Union, New Jersey 07083

For Additional Information

American Dental Assistants
Association
666 N. Lake Shore Drive,
Suite 1130
Chicago, Illinois 60611

2. Dental Services

Dental Hygienist

078.361-010

As a member of the dental health team, dental hygienists provide a number of preventive and therapeutic dental care services. Their services have enabled dentists to serve more patients and attend to work requiring more specialized knowledge. Duties of dental hygienists vary considerably, depending upon the laws of the state and needs of the dentist.

Most commonly, dental hygienists perform teeth "cleaning"--the removal of stains and scaling of deposits to prevent gum disease. They apply flouride to teeth to prevent tooth decay. As educators, they instruct patients on the care of their teeth (proper techniques of brushing and flossing), and good diet. Dental hygienists also assist dentists in diagnostic procedures such as obtaining medical and dental histories, taking and developing X-rays, and making impressions of the teeth from which models are made. These help the dentist determine the condition and structure of the teeth and the treatment required.

Some dental hygienists work in public school systems. There they may examine children's teeth and indicate the type of treatment needed. Also, they develop and present lessons to students on dental hygiene.

Personal Qualifications and Training

A person considering this occupation should enjoy working with people and be able to help patients overcome their fears and anxieties toward dental work. Manual dexterity and neat work habits are also important. Recommended high school courses include biology, health, chemistry, speech, and mathematics. Most dental hygiene programs are two-year programs and grant an associate degree. Some colleges offer four-year bachelor's degree programs. A few grant master's degrees. Dental hygienists with master's degrees often teach in the training programs or conduct research. Practitioners in New Jersey must be licensed.

Outlook

With the advent of dental health plans as well as population growth, the demand for dental care has increased considerably. Dentists in private practice often have at least one or more dental hygienists working for them. The need for personnel in this occupation is expected to grow.

Areas of Employment

- dentists' offices
- dental group practices
- dental clinics
- schools
- public health agencies

Schools in New Jersey

Bergen Community College
Paramus, New Jersey 07652

Camden County College
Blackwood, New Jersey 08012

Essex County College and
UMDNJ - School of Allied Health
Professions
Newark, New Jersey 07103

Fairleigh Dickinson University
Dental School
Hackensack, New Jersey 07601

Middlesex County College
Edison, New Jersey 08817

Union County Technical Institute
Scotch Plains, New Jersey 07076

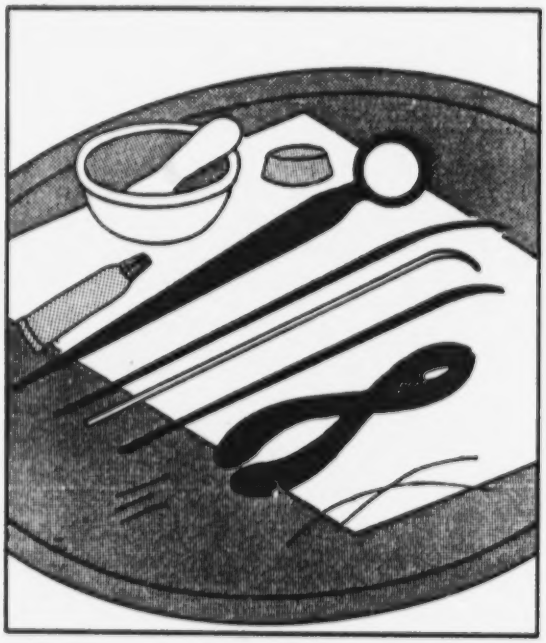
For Additional Information

American Dental Hygienist
Association
211 East Chicago Avenue
Chicago, Illinois 60611

2. Dental Services

Dental Laboratory Technician

712.381-018



The behind-the-scene members of the dental health care team are the dental laboratory technicians. They are the crafts people trained to construct artificial replacements of teeth lost through injury or disease. Depending on the dentist's prescriptions, these prosthetic appliances may be complete or partial dentures, crowns, bridges, or inlays. Dental laboratory technicians also construct the appliances used for orthodontics, such as retainers and braces. The work requires the use of hand tools, molding equipment, fabricating machines, and polishing tools.

Dental laboratory technicians can be compared to sculptors. Working from models and impressions, they make reproductions of the replacement part; these are then cast in acrylic or ceramic and finished with polishing tools. Well-fitting, comfortable, and natural looking dentures, for example, depend on the precision and skills of these technicians. For patients who need only a few teeth, the replacements must match the color and size of existing teeth. All these activities require much care and attention to detail.

Most dental laboratory technicians work for commercial dental laboratories which serve large numbers of dentists. A small number work in dental clinics or for dentists in private practice.

Personal Qualifications and Training

Persons desiring to enter the field should enjoy delicate, precision work and working with their hands. A high level of manual dexterity and good color vision are also important. Useful high school courses should include art, ceramics, sculpture, metal shop, chemistry and biology. Many people enter this field by training on the job at commercial dental laboratories. The training period extends three to four years. A number of community colleges and technical schools offer formal two-year programs that lead to an associate degree or diploma. Training is also available through the Armed Forces. Certification is awarded by the National Board for Certification in Dental Laboratory Technology, which administers the certifying exam. Candidates must first meet the education and experience requirements.

Outlook

With the increasing demand for dental care and an older population needing dentures and other prostheses, opportunities in this field are very good. Also, dental appliances must be custom crafted for each patient and therefore cannot be mass produced. Experienced technicians often advance to the position of laboratory managers or become owners of their own laboratory.

Areas of Employment

- commercial dental laboratories
- dental clinics
- dentists' offices
- dental supply companies

For Additional Information

National Association of Dental Laboratories
3801 Mt. Vernon Avenue
Alexandria, Virginia 22305

Schools in New Jersey

Camden County Area Vocational/
Technical School
Sicklerville, New Jersey 08081

Lyons Institute
Cherry Hill, New Jersey 08034

Union County Technical Institute
Scotch Plains, New Jersey 07076

3. Dietetic and Nutritional Services

Dietitian

Clinical Dietitian

Public Health Nutritionist
(Community Dietitian)

Dietetic Assistant

Dietetic Technician

3. Dietetic and Nutritional Services

077.___ ___ Dietitian
077.127-014 Clinical Dietitian
077.127-010 Public Health Nutritionist
(Community Dietitian)

We all know that good health is related to what we eat and the proper balance of foods in our diet. Proper nutrition is all the more important for patients recovering from illness or injury. The growth of new tissue, such as mending of broken bones, depends on the necessary building materials which, of course, come from food. Moreover, some diseases can be controlled or cured by special diets. Dietetic service in a hospital is, therefore, a basic part of a patient's total treatment and is closely coordinated with the treatment plan.

The hospital dietitian, trained in the science of food, nutrition, and institutional management, plans and provides for patients' meals. In a large hospital an administrative dietitian heads the dietetic department and has the responsibility of training and supervising staff, purchasing food, supplies and equipment, maintaining health and safety regulations, and ensuring that patients receive appropriate nutrition. The therapeutic dietitian works more closely with patients and physicians in planning meals that meet the medical needs as well as food preferences of the patient. This at times requires much creativity as the sick frequently have little appetite for food. They often must be persuaded to take the nourishment they need, by making the food attractive and appealing to their tastes. Some patients require very restrictive diets, so dietitians must design and plan meals around special types of foods. In addition, they supervise the preparation of the meals.

In some hospitals and clinics, nutrition education and counseling services are provided. Here dietitians instruct individuals or groups on food selection and preparation for their special needs such as for diabetics, expectant mothers, the obese, etc. They may also conduct courses for hospital personnel and interns on various aspects of nutrition and the services of the department.

Research dietitians in hospitals conduct studies and surveys to gain information about the effectiveness of particular diets or information to guide the development of new diet programs.

Public health nutritionists have similar training but work in a somewhat different setting--health agencies, cooperative extension services, and schools. They are involved more with providing information services and developing programs for individuals and groups to improve nutrition and maintain good health.

Personal Qualifications and Training

An interest in food and food preparation is obviously an important qualification, but in addition one should possess a strong interest and background in science. Administrative and organizational skills and ability to communicate with a diversity of people are also important. High school courses in biology, chemistry, business, home economics, and mathematics are good preparation. Basic requirements for dietitians are a bachelor's degree in dietetics and nutrition or home economics, and completion of an approved six to twelve month internship program. Some positions, such as with a public health agency, require a graduate degree. Dietitians who pass the registration examination are registered by the American Dietetic Association.

Outlook

Increased awareness of the importance of proper nutrition in maintaining good health has heightened the role of dietitians. The employment of dietitians has extended into a greater number of institutional, government, and industrial settings. Industry, for example, has recognized the value of providing good nutrition for its employees in their cafeterias. As the concern for good nutrition persists and dietitians become more involved in total health care, the demand for trained dietitians will remain high.

Areas of Employment

- hospitals
- health care facilities
- schools
- health agencies
- colleges and universities
- industrial plants
- cafeterias
- restaurants

For Additional Information

American Dietetic Association
430 North Michigan Avenue
Chicago, Illinois 60611

Schools in New Jersey

College of St. Elizabeth
Convent Station, New Jersey 07961

Montclair State College
Montclair, New Jersey 07043

Rutgers - The State University
of New Jersey
Douglass College
New Brunswick, New Jersey 08903

3. Dietetic and Nutritional Services

Dietetic Assistant

Dietetic assistants work under the supervision of dietitians and dietetic technicians. They assist in the supervision of food production and service to insure that meals are properly prepared and delivered to the appropriate patients. They may have charge of ordering the food and supplies, scheduling employees, overseeing food preparation and presentation, and organizing the daily work. Their activities may also include helping patients select menus, processing the daily orders, and transmitting the information to the food preparation staff. Dietetic assistants are also called food service supervisors.

Personal Qualifications and Training

Working well as a team member, a keen sense of observation, neatness and managerial abilities are useful qualities for this occupation. Although dietetic assistants in the past were trained on the job, employers prefer to hire persons trained through formal, approved programs. One-year training programs for dietetic assistants are offered by community colleges and vocational-technical schools. Graduates from approved programs are eligible for membership in The Hospital, Institution and Educational Food Service Society.

Outlook

As with other workers in the food service field, there is a strong demand for trained personnel in this occupation. The demand will remain high as the number of food service facilities increase.

Schools in New Jersey

Atlantic County Vocational/
Technical School
Mays Landing, New Jersey 08330

Bergen County Vocational/
Technical School
Hackensack, New Jersey 07601

Burlington County Vocational/
Technical School
Burlington Community College
Pemberton, New Jersey 08068

Gloucester County Vocational/
Technical School
Sewell, New Jersey 08080

Mercer County Vocational/
Technical School
Trenton, New Jersey 08690

Middlesex County Vocational/
Technical School
East Brunswick, New Jersey 08816

Morris County Vocational/
Technical School
Denville, New Jersey 07834

Ocean County Area Vocational/
Technical School
Toms River, New Jersey 08753

Passaic County Technical and
Vocational School
Wayne, New Jersey 07470

Sussex County Vocational/Technical
School
Sparta, New Jersey 07871

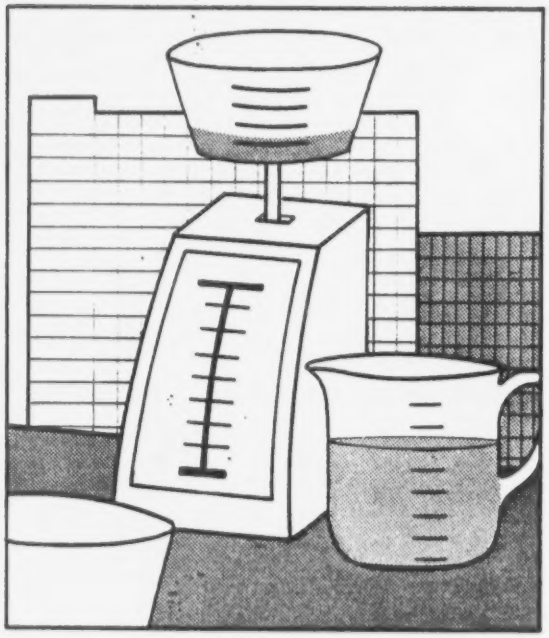
Union County Technical Institute
and Vocational Center
Scotch Plains, New Jersey 07076

For Areas of Employment and Additional Information,
see DIETETIC TECHNICAN

3. Dietetic and Nutritional Services

Dietetic Technician

077.121-010



The shortage of dietitians has led to the expansion of training programs for dietetic technicians, the middle managers of food service facilities. Trained in nutrition and management, they assist dietitians in meal planning, assessing nutritional programs, and the supervision of food preparation and service. In hospitals and extended care facilities, their duties include planning patient menus for diets prescribed by physicians, using established guidelines. They train and supervise dietetic assistants and aides in meal serice. In some settings they are responsible for food services, managing the food preparation personnel, monitoring food production, and planning menus. Other activities of dietetic technicians may include standardizing recipes, testing new products, teaching classes in nutrition and food preparation, and planning nutritional programs for individuals and groups.

Personal Qualifications and Training

Interest in foods, managerial and administrative abilities, and working well with people are important qualities for this occupation. The responsibility of providing good nutrition, keeping the operation cost effective and managing personnel requires good organizational and leadership skills. High school courses should include biology, chemistry, math, business and health. Two-year associate degree programs in dietetic technology are offered by community colleges. Dietetic technicians are registered by the American Dietetic Association.

Outlook

The increased need for dietetic services in recent years has created a high demand for dietetic technicians. This trend is expected to continue as the numbers of food service facilities increase. Also, the public's concern for good nutrition has emphasized the importance of hiring personnel trained in nutrition and food science, in company cafeterias and other places feeding people on a large scale.

Areas of Employment

- hospitals
- extended care facilities
- schools
- health agencies
- company cafeterias
- restaurants

Schools in New Jersey

Camden County College
Blackwood, New Jersey 08012

Middlesex County College
Edison, New Jersey 08817

For Additinal Information

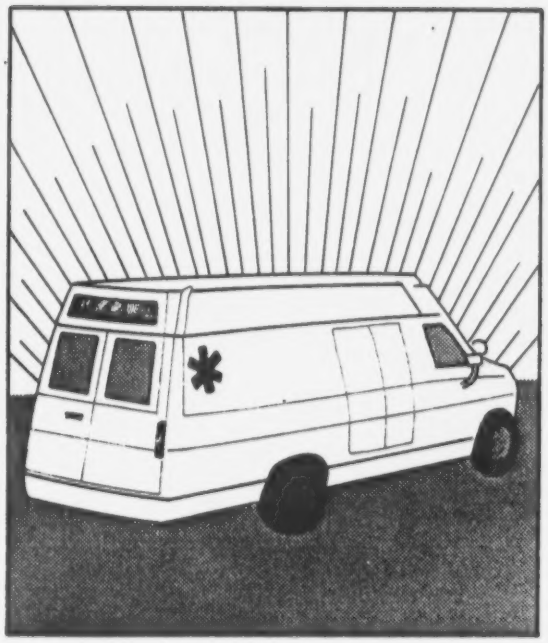
The American Dietetic Association
430 N. Michigan Avenue
Chicago, Illinois 60611

The Hospital, Institution and
Educational Food Service Society
430 N. Michigan Avenue
Chicago, Illinois 60611

4. Emergency Medical Services

Emergency Medical Technician-Paramedic
(EMT - basic or ambulance)
(EMT - intermediate)
(EMT - paramedic)

4. Emergency Medical Services



Emergency Medical Technician-Paramedic
079.374-010

(EMT - basic or ambulance)
(EMT - intermediate)
(EMT - paramedic)

Emergency situations require immediate attention. The treatment patients receive at the accident scene or enroute to the hosptial may be the difference between life and death. The crucial role of emergency medical technicians (EMT) has been extensively portrayed on television. Arriving at the scene of the illness or accident, they must quickly assess the nature of the problem and decide how to best proceed. Heart attack victims may need CPR; drowning victims need airways cleared and breathing restored; burn victims must be protected against shock; the bleeding of accident victims must be controlled. The list is endless, for each situation is different. Oftentimes, EMTs are involved in rescue operations as well.

EMTs provide the immediate first aid and prepare the patients for transport in ambulances. They monitor the patient's condition until hospital personnel take over. Many ambulance services now have advanced life support units and communication systems to maintain contact with hospitals for instructions. EMTs who work in these units have EMT-paramedic registration. They are qualified to administer drugs and fluids as well as provide oxygen and more advanced treatment techniques for the critically ill or trauma victims. EMT-paramedics are trained to administer emergency medical treatment, stabilizing a patient's condition until a doctor is available. With telecommunication and monitoring systems, information from the scene can be transmitted to the hospital medical staff who then relays instructions to the EMT-paramedic. In a sense, EMT-paramedics are an extension of the doctor at the scene of the emergency.

Personal Qualifications and Training

EMTs must be persons who can work calmly, quickly and efficiently under stressful conditions. Wise thinking, care in following prescribed procedures and instructions, and ability to respond to difficult situations are important qualities. Since accidents are not limited to a particular environment, EMTs work indoors and out and must be in good health and physically capable of heavy lifting. Until the last few years, EMTs were not required to have formal training. Laws have since changed. Persons who

are high school graduates, age 18 or over, may enter a training program. An 81-hour program, developed by the Department of Transportation, is offered by police and fire departments, hospitals and health departments. Completion of this basic course and passing the test qualifies one to be registered as an EMT. With additional formal training and experience one can be registered as an EMT-paramedic at the advanced level. Two-year associate degree programs for EMT-paramedics are offered by community colleges.

Outlook

Public awareness of the importance of good ambulance and emergency medical services has greatly expanded these services. In addition, federal laws have encouraged communities to develop and improve their systems. Many communities are also changing from volunteer ambulance services to paid services. All these factors influence the demand for well-trained EMTs.

Areas of Employment

- ambulance services
- hospital based ambulance squads
- fire and police departments
- hospital emergency departments

For Additional Information

National Registry of Emergency
Medical Technicians
P.O. Box 29233
Columbus, Ohio 43229

Schools in New Jersey

Associate Degree Program
EMT - paramedic

Essex County College and UMDNJ -
School of Allied Health
Professions (joint sponsors)
Newark, New Jersey 07103

EMT training and paramedic programs are offered by a number of hospitals. For that listing contact:

State of New Jersey
Department of Health
Division of Emergency Medical
Services
Stuyvesant Avenue at Whittlesey
Road
Trenton, New Jersey 08625

5. Eye Care Services

Dispensing Optician

Ophthalmic Laboratory Technician
(Optical Mechanic)

Ophthalmologist

Optometric Assistant

Optometrist

Orthoptist

5. Eye Care Services

Dispensing Optician
713.361-014
and
299.474-010

The role of a dispensing optician, in some respects, can be compared to that of a pharmacist. Instead of filling drug prescriptions, an optician fills prescriptions from eye doctors (ophthalmologists) or optometrists for corrective lenses. They help their customers select appropriate frames and then take measurements to determine the lens size and how the lens should be positioned. The optician then writes the order for the optical laboratory to grind the lenses according to his/her specifications. When the glasses are received from the laboratory, the optician uses measuring instruments to check whether the lenses are correctly made. He/She fits the eyeglass on the customer, making necessary adjustments so that it can be worn properly and comfortably. Opticians may also fit contact lenses. Fitting lenses to the cornea of the eye is a delicate procedure, requiring much skill and care.

As the person who sells lenses and frames, an optician must be knowledgeable about the variety of products so that he/she can best advise the customer. A customer who works actively outdoors may need frames and glasses different from one whose work requires much reading. The size, shape and weight of the frame and how it fits the wearer are critical aspects in seeing well with corrective lenses. Also, different people react differently to wearing glasses. Children, for example, who obtain glasses for the first time are often hostile or embarrassed. They need to be reassured that glasses are beneficial as well as learn how to wear and take care of their glasses. Thus, the optician's work requires much insight, tact and patience.

Most opticians work in their own retail business, retail optical shops or department stores that sell prescriptive lenses. Some work in hospitals and clinics.

Personal Qualifications and Training

Serving customers is a major part of an optician's work, so patience and understanding of others are important assets. The job also involves using measurement equipment and tools, as well as making calculations. Therefore, manual dexterity and mathematical ability are highly desirable. For those wishing to own or manage a store, business training is most desirable. Many opticians learn their occupation from on-the-job training. However, developments in eye care technology during the past 25 years (e.g., the several types of contact lenses) require more sophisticated knowledge. More schools are now offering programs that lead to associate degrees in opticianry. Ophthalmic optical companies offer apprenticeship training programs. These programs are registered by the Bureau of Apprenticeship and Training of the U.S. Department of Labor. Training programs are also offered by the Armed Forces. New Jersey requires that opticians be licensed.

Outlook

Similar to other eye care professionals, the demand for opticians is expected to grow faster than the average for all other occupations. The demand is related to the increase of older persons and a public more educated about eye care. With private and public health insurance programs, people are less likely to postpone having their eyes checked. Also, eyeglass frames have become more fashionable. People who wear glasses often have several pairs--changing them as they do other accessories.

Areas of Employment

- retail optical stores
- department stores
- ophthalmologists' or optometrists' offices
- hospitals
- clinics
- wholesalers or manufacturers or optical goods

For Additional Information

Opticians Association of America
1250 Connecticut Avenue, NW
Washington, D.C. 20036

National Federal of Opticianry Schools
Ferris State College
Grand Rapids, Missouri 49307

Schools in New Jersey

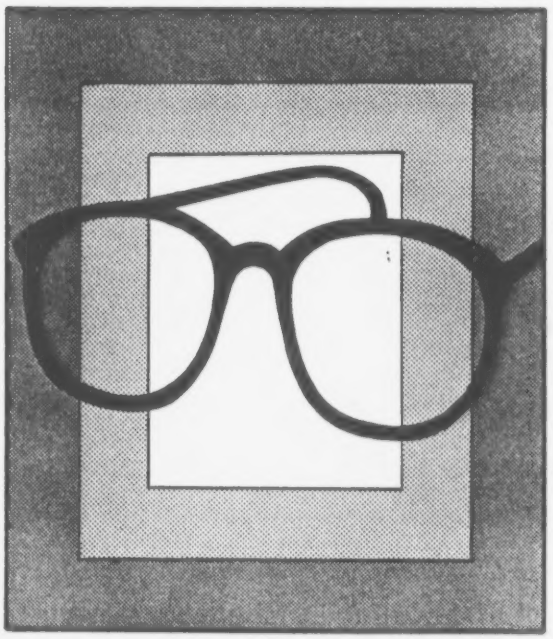
Camden Community College
(COA accredited)
Blackwood, New Jersey 08012

Essex County College
Newark, New Jersey 07102

5. Eye Care Services

Ophthalmic Laboratory Technician (Optical Mechanic)

716.280-014



Corrective lenses are made by changing the surface of blank lenses through the process of grinding and polishing. This is the work performed by) ophthalmic laboratory technicians called surfacers or lens grinders. Prescription lenses are made to order and must meet the precise specifications indicated by the doctor. Since surfacers use grinding machines to grind the lens, they must periodically check the progress and accuracy of their work using optical measuring devices and testing instruments. Hence, they need to be knowledgeable in the use of these measuring tools.

The polished lenses then go to the ophthalmic laboratory technician called the bench technician or finisher. This person marks and cuts lenses and smooths the edges to fit the frame. The lenses are mounted into the frame and again inspected for imperfections and checked against the prescription.

In small laboratories this work may be performed by the same person. Larger laboratories, on the other hand, divide the work into separate operations. In very large laboratories, technicians specialize in operating a single type of machinery.

Personal Qualifications and Training

Since the work requires great accuracy and precision, persons in this occupation must be able to work skillfully and carefully with tools. Knowledge of physics, mathematics and mechanical drawing are important in making measurements and using the testing instruments. One should also have sharp vision and good color and depth perception.

Most people enter this occupation through on-the-job or apprenticeship training programs of about two to three years in length. Formal programs are also offered by some vocational technical schools and community colleges. Training is also available through the Armed Services. For licensing, New Jersey requires an associate degree in ophthalmic science or a two-year supervised State Board registered apprenticeship.

The work performed by ophthalmic laboratory technicians is also that learned by dispensing opticians. Therefore, technicians with additional training or retail dispensing experience often become dispensing opticians in retail outlets or open their own business.

Outlook

Job openings for ophthalmic laboratory technicians are expected to increase more rapidly than the average of all other occupations. This growth is related to the increasing demand for corrective lenses and population growth. However, the occupation itself is small so that competition for jobs may be keen. Persons with formal skill training will, of course, be more desirable to employers.

Schools in New Jersey

Camden Community College
Blackwood, New Jersey 08012

Essex Community College
Newark, New Jersey 07102

For Additional Information

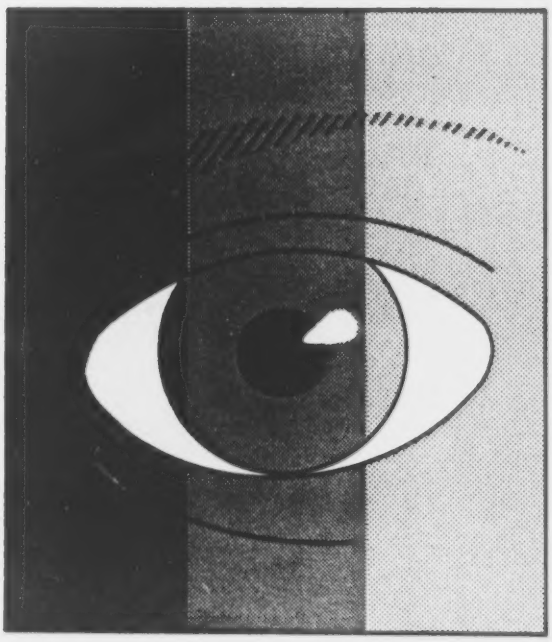
Opticians Association of America
1250 Connecticut Avenue, NW
Washington, D.C. 20036

National Federation of Opticianry Schools
Ferris State College
Big Rapids, Michigan 49307

5. Eye Care Services

Ophthalmologist

070.101-058



Ophthalmologists are medical doctors who specialize in the treatment of eye disorders and injuries. They diagnose, prescribe treatment, and perform eye surgery. Their patients range from someone who needs a prescription for corrective lenses, to one who has suffered an eye injury, to one who requires surgery to restore vision.

Ophthalmologists employ specialized and sophisticated instrumentation to aid in eye examinations and diagnosis. These instruments permit the physician to look inside the eye for possible abnormalities. In addition, other tests are performed to determine the extent of vision loss. To restore vision or arrest a disease, treatment may entail corrective lenses, medication, surgery, corneal transplant or eye exercises.

Personal Qualifications and Training

Given that the field of medicine is highly competitive and rigorous, a person desiring to enter this profession must be highly motivated and possess high level thinking abilities. Since the sciences are the basis for understanding medicine, one should enjoy and be well prepared in the sciences. Moreover, because doctors deal with human life, they should be knowledgeable about the human experience. It is therefore important to include courses in the humanities and the arts. Ophthalmologists, in particular, need good manual dexterity and coordination to perform delicate eye operations.

The specialty of ophthalmology requires extensive training. The three or four years of college and four years of medical school are followed by one year of internship and three years of residency training in a hospital with an ophthalmic teaching program. In addition to licensing by the State Board, ophthalmologists must pass their specialty examination administered by the American Board of Ophthalmology.

Areas of Employment

- private practice
- health care centers
- eye clinics
- hospitals
- medical colleges

Schools in New Jersey

University of Medicine and
Dentistry of New Jersey
New Jersey Medical School
Newark, New Jersey 07103

Rutgers College of Medicine and
Dentistry of New Jersey
New Brunswick, New Jersey 08903

For Additional Information

American Association of
Ophthalmology
1100 - 17th Street NW
Washington, D.C. 20036

American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

5. Eye Care Services

Optometric Assistant

079.364-014

Optometric assistants work in optometrists' offices, performing a wide variety of duties. The duties range from record keeping to measuring and fitting eyewear to helping patients with their eye exercises. The work is thus a combination of office administrative activities, patient care activities and laboratory activities. Their assistance enables the optometrist to devote more time to their professional duties.

The work will vary depending on the size of the practice and the staff. In a larger clinic, for example, optometric assistants may do more specialized work. Some assistants assist in visual training; others help patients select frames and fit eyeglasses, as well as schedule appointments and keep records.

Personal Qualifications and Training

Manual dexterity, ability to work accurately and efficiently, and flexibility are important traits for optometric assistants. In addition, an interest in helping people and a pleasant personality makes the job more enjoyable and interesting.

On-the-job training is how most optometric assistants learn their occupation. However, a number of schools offer one-year training programs or two-year training programs that lead to an associate degree. Such programs will include courses in the anatomy and physiology of the eye, vision training, and office procedures. Training is also available through the Armed Services. Persons who have formal training will, of course, be more desirable candidates for employment.

Outlook

Employment opportunities in this field continue to grow. Although this is not a large field, job prospects for trained personnel are predicted to be very good. The rate of growth will probably be about the same as for other occupations in eye care.

Areas of Employment

- optometrists' offices
- retail eye care centers
- eye clinics
- hospitals

For Additional Information

American Optometric Association
Paraoptometric Guidance Department
243 North Lindbergh Boulevard
St. Louis, Missouri 63141

5. Eye Care Services

Optometrist

079.101-018

About one-half of the population in the United States have a vision problem and wear corrective lenses. Unless they suffer from an eye disease or incurred an eye injury, it is very likely that they at some time used the services of an optometrist. Optometrists are trained to examine the eyes for vision problems and abnormal or disease conditions. They determine the distance and depth that a person can see, as well as one's ability to coordinate eye movement. After completing the tests and evaluating the problem, they prescribe the necessary treatment. In most cases, the prescription is some form of corrective lens. In other cases, the treatment is visual training, teaching the patient eye exercises to improve vision. If a disease is found, the optometrist refers the patient to the proper medical specialist. Optometrists do not prescribe drugs or perform eye surgery.

Most optometrists in private practice fill their own prescriptions, ordering the proper lenses from an optical laboratory and fitting them into frames. Also, the fitting of contact lenses on patients requires a number of different specialized skills. Since the majority of optometrists have their own private practice, they also serve as office manager, salesperson and optical lab technician. Some optometrists are in group practice and may have opticians and optical technicians employed in their office and laboratory.

In recent years, there has been an increasing number of optometrists who work in industry rather than in private practice. Optics engineering is an area where an optometrist can apply his/her knowledge in the research, design and testing of optical equipment. Visual research is an expanding field because industry, educational institutions and government agencies are interested in ways to improve products and the safety of products. They also want to know how different environments affect the way people see. With space travel in the future, an important research question is, "How is vision affected when one travels at high speeds?"

Working in hospitals, health clinics, or teaching in colleges are other opportunities for an optometrist.

Personal Qualifications and Training

As an applied scientist who serves the public, an optometrist must be knowledgeable in the biological and physical sciences. He/She should be a good problem solver because the vision problems of each patient are unique. A pleasing personality, patience, and the ability to work with people of all ages are important assets. In addition, good managerial skills are the keys to a successful private practice.

Training for the doctor of optometry degree consists of a four-year program at an accredited optometry school or college. One usually enters an

optometry school after completing at least two or three years of pre-optometry study at an accredited college or university. To practice in New Jersey or any other state, an optometrist must be licensed. The licensing procedure includes passing the National Board of Optometry examination and a clinical examination administered by the State Board.

Outlook

The field of optometry is a growing field and is expected to continue at a rate faster than the average of all other professions. As our population of older people increases, more people will need eye care services. The public is also better educated on the importance of good vision and, therefore, will seek corrective treatment. Optometric services are now covered by many health insurance plans so people are more inclined to use those services.

Areas of Employment

- private practice
- hospitals
- community health clinics
- commercial vision centers
- Armed Forces
- eye clinics
- optical products manufacturers
- private and public health agencies
- educational institutions

For Additional Information

American Optometric Association
243 N. Lindbergh Blvd.
St. Louis, Missouri 63141

Association of Schools and Colleges of Optometry
1730 M Street, NW, Suite 310
Washington, D.C. 20036

Schools in the Nearby Area

There are no optometry schools in New Jersey. Schools in the nearby area include:

Pennsylvania School of Optometry
Philadelphia, Pennsylvania 19141

State University of New York
College of Optometry
122 E. 25th Street
New York, New York 10010

5. Eye Care Services

Orthoptist

079.371-014

Orthoptists are eye muscle specialists who aid persons with problems in focusing and related eye disorders. Their work includes planning and conducting therapy programs. They use a variety of specialized instruments to test vision, focusing, eye movement and coordination. Using developmental glasses and prisms, they help patients improve their visual skills, such as focusing with both eyes or hand-eye coordination.

Many patients are young children, so an orthoptist should have good teaching skills as well as an understanding of child psychology. In larger facilities such as a medical center, orthoptists are part of an ophthalmic team and are involved in teaching as well as research and development of new therapy techniques.

Personal Qualifications and Training

The ability to work with people, understanding, and patience are important for this occupation. A good background in the sciences and behavioral sciences is also important. Orthoptic candidates must have completed at least two years of college before they may enter a training program or a preceptorship, a two-year course of study and clinical experience. Following training, an orthoptist may apply for certification by the American Orthoptic Council.

Outlook

This is a small but emerging profession. More positions are open than there are available candidates. However, most positions are located at large cities or in medical centers.

Areas of Employment

- hospitals
- eye clinics
- offices of eye doctors

Nearby Institutions Accredited by the American Orthoptic Council

Preceptorships

Johns Hopkins University
School of Medicine
Wilmer Institute
Johns Hopkins Hospital
Baltimore, Maryland 21205

St. Charles Hospital
Eye Treatment Center
200 Belle Terre Road
Post Jefferson, New York 11777

Training Centers

New York Eye and Ear Infirmary
School of Orthoptics
310 East 14th Street
New York, New York 10003

School of Orthoptics
Presbyterian Hospital
New York, New York 10032

For Further Information

The American Orthoptic Council
The University of Iowa Hospital
Department of Ophthalmology
Iowa City, Iowa 52242

6. Health Administration, Clerical and Support Services

Health Services Administrators

Hospital Administrator
Institution Director
Public Health Service Officer
Medical Facilities Section Director

Admitting Officer

Hospital - Admitting Clerk
(Admissions Clerk)

Executive Housekeeper

Health Care Manager
(Ward Supervisor, Unit Manager)

Unit or Ward Clerk

Medical Assistant

Medical Secretary
Dental Secretary

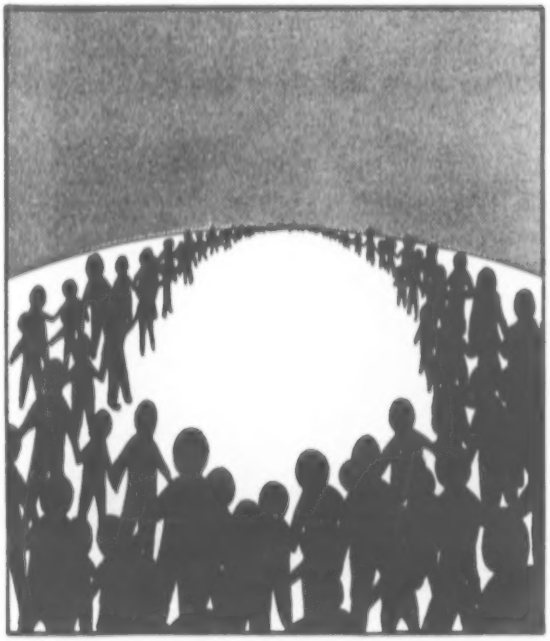
Medical Record Administrator

Medical Record Technician

Medical Record Clerk

6. Health Administration, Clerical and Support Services

Health Services Administrators
187.117-010 Hospital Administrator
187.117-018 Institution Director
187.117-050 Public Health Service Officer
188.117-082 Medical Facilities Section Director



Hospitals, health clinics and other types of health care/medical facilities, especially the larger institutions, are complex organizations. To keep them operating smoothly and efficiently and insuring that they serve the public well, is the task of health service administrators. Their role is that of a manager who plans, organizes, and supervises the variety of activities that take place in a facility. Health care or medical facilities, large or small, require skillful managers who work well with the staff and the community they serve.

The particular duties of health services administrators vary with the workplace. Approximately half of them are employed in hospitals, others in clinics, medical group practices, community health centers, nursing homes, mental health centers, extended care facilities or government agencies.

Hospital administrators are very similar to the top executive of a corporation but are specially trained and knowledgeable about health care and the delivery of the health services. While the board of trustees establishes the hospital policy, the administrator is the decision-maker of the hospital on a day-to-day basis. The administrator is responsible for the internal operations which involve managing the staff, the supplies and equipment needed to provide the services, and the physical facilities. Another important concern is managing the finances efficiently so that patients receive quality care at a reasonable fee. They need to be knowledgeable about new developments and technology in medicine/health care so that the hospital can improve its patient care facilities and services.

In large hospitals the hospital administrator is assisted by an extensive staff. This staff may include an assistant hospital administrator, an administrative assistant, supervisors of the various departments, business manager, controller, personnel director, purchasing director, and so on. In a small clinic, for example, the administrator may assume most, if not all, of those roles.

Where a health service administrator is employed is very much dependent on his/her training, work experience and specialization. There are a wide variety of different opportunities available in this occupation. Moreover, the occupation offers great challenges because health service administrators chart the course of the quality of health care of this country. By developing and improving services and creating good working environments for those who provide the services (doctors, nurses, technicians, etc.), they directly influence the lives and health of the public.

Personal Qualifications and Training

Managing a complex organization such as a hospital requires high level leadership qualities, good communication skills, and abilities in planning and decision making. The amount of training needed depends on the size of the organization and the level of responsibility. For larger hospitals and health organizations, graduate degrees in health or hospital administration and work experience are required. A college degree in health services administration or business may qualify one to work as an administrative assistant or head of a hospital department. The requirements will vary depending on the nature of the work. Some facilities require greater knowledge of hospital organization and health care practices.

Graduate degree programs in health administration are offered by various college departments and schools. They include graduate business schools, schools of public health, medical schools, schools of health sciences/professions, and schools of public administration. Most are two-year master's degree programs and some include a residency training in a hospital setting. More recently, colleges have developed undergraduate health care administration programs. These programs focus more on preparing students for work in smaller facilities such as clinics, nursing homes, group practices, and as managers of hospital departments.

Outlook

The increasing number and types of health facilities have created a high demand for health services administrators. As health services management becomes more complex, a higher degree of training and specialization becomes necessary for some jobs. The trend toward group medical practice has also increased the need for health administrators. The health care field has become the nation's largest employer, and managers are needed at all levels. However, the larger number of openings are found at the middle management level, as activities become more specialized and new departments are formed.

Areas of Employment

- hospitals
- health service agencies
- health organizations
- nursing and convalescent homes
- clinics
- group practices
- community health centers

Schools in the Nearby Area

Graduate Programs

City University of New York
School of Business and Public Administration
New York, New York 10010

Columbia University
School of Public Health
New York, New York 10032

Cornell University
Graduate School of Business and Public Administration
Ithaca, New York 14853

New York University
Graduate School of Public Administration
New York, New York 10003

University of Pennsylvania
The Wharton School
Philadelphia, Pennsylvania 19104

Pennsylvania State University
College of Human Development
University Park, Pennsylvania 16802

Temple University
School of Business Administration
Philadelphia, Pennsylvania 19122

Undergraduate Programs

Herbert H. Lehman College
City University of New York
Bronx, New York 10468

Ithaca College
School of Allied Health Professions
Ithaca, New York 14850

Pennsylvania State University
College of Human Development
University Park, Pennsylvania 16802

For Additional Information

Association of University Programs in Health Administration
One DuPont Circle, Suite 420
Washington, D.C. 20036

American College of Hospital Administration
840 North Lake Shore Drive
Chicago, Illinois 60611

OTHER MANAGEMENT PERSONNEL

Following are some areas of health service administration that have emerged or become more specialized in recent years. Some of these managers may not be directly categorized as health care personnel because their work is common to other industries as well. However, these personnel have additional training or experience in the health care setting.

Hospital Controller

To meet the ever growing high cost of running a hospital, while still providing medical service at an affordable price, is the challenge before the controller. He/She, as head of the hospital's fiscal affairs, is responsible for budgeting, bookkeeping, accounting, crediting, and collecting of patient bills. Working closely with the managers of other departments and hospital administrators, the controller coordinates the hospital's finances and develops plans and procedures for making best use of the institution's resources and assets.

Data Processing Manager

Hospitals today rely on computers for billing, maintaining patient records, keeping inventory of supplies, scheduling personnel, bookkeeping, and the many other tasks that involve the storage and use of information. The data processing manager is responsible for coordinating the various functions of the information processing department. With rapid developments in computer technology, this manager must keep informed of new computer applications and how computers may be used to further improve hospital operations. The data processing manager's role is in the planning, programming, and processing of data and information.

Business Office Manager

The business office of a hospital prepares patient bills and reports, does the bookkeeping, handles the payrolls and maintains the various types of business records. The business office manager runs this department and supervises the clerical staff.

Personnel Director

How well the staff works together and with patients may very well reflect the efforts of the personnel department and its director. The responsibility of the director is the recruitment, selection, and placement of employees. He/She also develops personnel policies and work procedures, employment practices, salary scales, and grievance procedures. Other duties may include establishing training programs and familiarizing employees with the hospital work environment.

Purchasing Director/Material Manager

The varied supplies and equipment needed to run a hospital and the continued development and changes in medical treatment and health care, makes this a stimulating and challenging position. The purchasing director must develop a keen understanding of the needs of each department and keep up with new products and trends. He/She plans and supervises the different aspects of purchasing, storing, and distributing the multitude of items needed in the hospital.

Risk Manager

Since the life and well-being of patients depend on a competent health care staff and safe conditions, the hospital must continually examine its methods of serving patients. Also, the hospital may be sued if it is negligent in its practice. Hospitals now use a logical and systematic approach called a risk management program to examine their facilities and practices to insure safe environments for patients and staff. The risk manager implements and coordinates this program, working closely with the nursing and medical staff.

Quality Assurance Director

Consumers, better informed and educated, have influenced improvements in the quality of products and services. This trend has extended also to the hospitals. Hospitals have adopted quality assurance programs to promote the quality of patient care. The department headed by the quality assurance director monitors patient length of stay and services received. Through a system of reviews and medical audits, the director determines whether the resources of the institution are adequately used. The purpose is to make sure that patients receive appropriate services and that the facility has provided for the patients' needs.

6. Health Administration, Clerical and Support Services

205.137-010 Admitting Officer

205.362-018 Hospital - Admitting Clerk (Admissions Clerk)

The admitting officer or member of his/her staff is probably the first person one encounters upon entering the hospital. He/She interviews the patient or person representing the patient for information needed by the hospital. This information includes personal data and financial arrangements. Using that information, physicians' orders, the nature of illness, and availability of space, the admitting personnel then assigns the patient to the proper department and room. The department is notified, necessary services are arranged, and papers of the patient's admission are prepared.

The admitting officer is in charge of supervising and coordinating the activities and staff of the admitting department. The role requires efficiency, attention to detail and the ability to make patients feel at ease and comfortable.

The hospital admitting clerk works under the supervision of the admitting officer. He/She interviews, makes the patient assignment, arranges for the necessary services and equipment, and prepares the various patient forms for the medical, accounting, dietary, etc. departments. Because the hospital needs detailed information and the patient may not feel well, the admitting process must be conducted efficiently, with tact and a friendly attitude.

Personal Qualifications and Training

Work in the admitting department requires people who communicate well with others, exhibit a pleasant personality, and are able to handle emergency or stressful situations. Much of the work involves record-keeping, so typing is essential. There are no college requirements for these positions, but a person who has experience/knowledge in business administration, medical technology, psychology, and sociology is better qualified. Training is acquired on the job. An experienced hospital admitting clerk may advance to the position of admitting officer. In some hospitals, nurses are employed as admitting officers.

Outlook

Employment in this area is expected to grow as population increases. Also, with a larger proportion of elderly persons, there will be a greater need for hospital care.

Areas of Employment

- hospitals
- rehabilitation centers
- extended care facilities

6. Health Administration, Clerical and Support Services

Executive Housekeeper

187.167-046

One of the most important aspects of good patient care in hospitals is a safe, sanitary environment. Just the appearance of cleanliness is not enough. Hospitals must be aseptically clean. For example, patients recovering from surgery and premature infants are highly susceptible to infection and must be protected from any possible exposure to germs. Maintaining the high standards of cleanliness required by hospitals is the responsibility of the executive housekeeper and staff.

Executive housekeepers of large hospitals may supervise a housekeeping department with a staff of over 100. He/She must therefore be a good administrator, directing and scheduling activities so that the hospital is efficiently maintained. Responsibilities also include ordering cleaning supplies and equipment, analyzing work procedures, instructing the staff and accounting. The executive housekeeper needs to keep up-to-date on new cleaning chemicals, equipment, and techniques. Knowledge of the scientific principles of cleaning procedures, labor laws and safety regulations are also important.

Personal Qualifications and Training

Organizational, business, and problem solving skills are needed for this position. In the past, executive housekeepers advanced through promotions within the department. There is now an increasing trend to hire executive housekeepers with a college degree and a year of internship in the field. It has become recognized that formal education better prepares one for the diverse demands of this management position. A number of universities offer degrees in institutional housekeeping management.

Outlook

Growth in public facilities such as hospitals, hotels, resorts, schools, dormitories, etc. provide opportunities for qualified personnel.

Areas of Employment

- hospitals
- hotels
- resorts
- schools
- nursing homes

Schools in New Jersey

Burlington County College
Pemberton, New Jersey 08068

For Additional Information

The National Executive
Housekeepers Association
414 Second Avenue
Gallipolis, Ohio 45631

6. Health Administration, Clerical and Support Services

245.137-010 Health Care Manager (Ward Supervisor, Unit Manager)

245.362-014 Unit or Ward Clerk

The care of patients in a hospital/health care facility depends upon a variety of support activities that are of a nonmedical nature. Examples of such activities include organizing work schedules; delivering and receiving messages and supplies; assembling charts and recording routine information; ordering supplies; organizing the work area; receiving and assisting visitors; and filling patient requests on nonmedical matters. Administrative and clerical personnel perform these functions and increasingly have been given duties of greater responsibility, especially those which require business and supervisory skills. Their work frees the nursing and technical health care staff from the daily routine administrative activities and allows them to attend to the medical aspects of patient care.

Depending on the level of duties, these workers come under different job titles. A unit or ward clerk handles the routine clerical and reception work. A health care manager, ward supervisor or unit manager supervises and coordinates the administrative functions of one or more patient care units.

Personal Qualifications and Training

Dependability, neatness in work and appearance, a pleasing personality, and efficiency are useful qualities for this work. Most personnel in this position are high school graduates who receive training on the job. Two-year associate degree programs for health care managers are offered by a number of community colleges. Graduates of these programs are qualified for positions of greater responsibility.

Outlook

With the increase in use of health care services, there is a growing trend to hire nontechnical personnel to assume more of the clerical and managerial functions. The expansion of formal training programs is indicative of the need for more skilled staff to perform higher level functions, such as supervising ward activities. Job opportunities in this areas are expected to remain high.

Areas of Employment

- hospitals
- health care facilities
- nursing homes

Schools in New Jersey

Essex County College
Newark, New Jersey 07102

Union County Technical Institute
Scotch Plains, New Jersey 07076

For Additional Information

American Health Care Association
1200 15th Street, NW
Washington, D.C. 20005

6. Health Administration, Clerical and Support Services

Medical Assistant

079.367-010

In a solo or a small group practice, a medical assistant is a person of many trades. The duties are varied, ranging from secretarial and office management to assisting the physician in clinical activities. Office duties include scheduling patient appointments, typing medical reports, processing insurance claims, and bookkeeping. On the more technical side, duties may include preparing patients for examination or treatment, taking temperature and blood pressure measurements, preparing instruments, performing simple laboratory tests, and providing patient care under the doctor's supervision.

In larger group practices or clinics, duties are usually divided among several assistants. Some assistants may specialize in secretarial responsibilities while others concentrate on clinical responsibilities. With the help of medical assistants, doctors and nurses can devote more time to patient care and serve more patients.

Personal Qualifications and Training

The ability to work and communicate well with the public and to work efficiently and accurately are useful traits for this position. Being adaptable and dependable are particularly important when working for a doctor who practices alone. In the past, persons with secretarial skills gained their experience in medical assisting on the job. Today, physicians prefer to hire graduates from a certificate, diploma or associate degree program. The reason is because of the increasingly complex nature of the work, such as filling out insurance forms and using laboratory equipment. These programs range from approximately seven months to two years. Certification is awarded by the American Association of Medical Assistants after candidates pass its examination.

Outlook

Trained medical assistants rarely have difficulty finding a position. Job prospects continue to look good in the future. Every practicing physician needs at least one or more assistant.

Areas of Employment

- physician's office
- clinics
- group practices

Schools in New Jersey

Atlantic Community College
Mays Landing, New Jersey 08330

Bergen Community College
Paramus, New Jersey 07652

Burlington Community College
Pemberton, New Jersey 08068

The Bryman School
East Brunswick, New Jersey 08816

Camden County Vocational/Technical School
Sicklerville, New Jersey 08081

Cape May County Vocational/Technical School
Cape May Court House, New Jersey 08210

Essex County Vocational Technical School
Newark, New Jersey 07017

Hudson County Community College Commission
North Bergen, New Jersey 07047

Hudson County Vocational Technical School
North Bergen, New Jersey 07047

Institute for Advancement of Medical Science
Cherry Hill, New Jersey 08034

Lyons Institute
Cherry Hill, New Jersey 98034

Mercer County Vocational/Technical School
Trenton, New Jersey 08690

Salem Community College
Penns Grove, New Jersey 08069

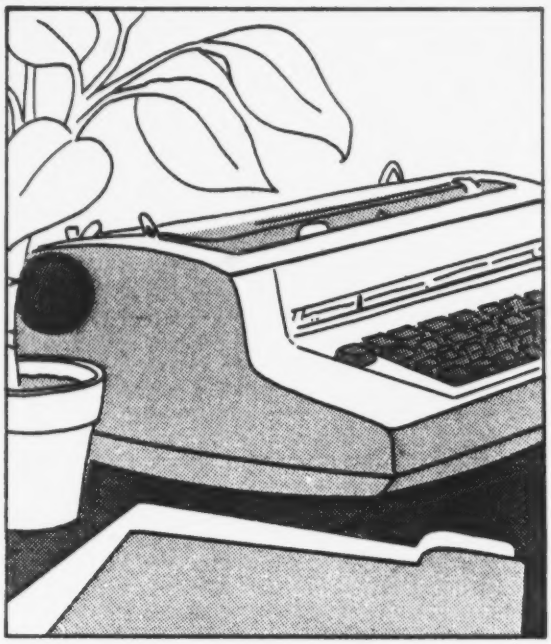
Salem County Vocational/Technical School
Woodstown, New Jersey 08098

Union County Technical Institute
Scotch Plains, New Jersey 07076

For Additional Information

American Association of Medical Assistants
One East Wacker Drive, Suite 1510
Chicago, Illinois 60601

6. Health Administration, Clerical and Support Services



201.362-014 Medical Secretary
Dental Secretary

Medical and dental secretaries who work for physicians and dentists in private practice provide the services necessary to keep the office and practice operating efficiently. Their organizational skills in scheduling patients, maintaining case histories, and processing reports and bills enable doctors to attend to the medical/dental needs of the patients. In addition to the typical secretarial skills, medical/dental secretaries need a knowledge of medical/dental terms as well as insight into health problems. Records must be accurately maintained so that patients receive proper treatment. As persons who receive the patient or answer the phone, medical/dental secretaries must be aware of medical situations that require immediate attention. Their responsibilities can be quite extensive depending on the size of the practice, other personnel on staff, and needs of the doctor.

Medical/dental secretaries are also employed in hospitals and other health care facilities. In larger organizations the functions may be more specialized than in a solo practice office where one tends to perform a wide range of tasks.

Personal Qualifications and Training

A medical/dental secretary is usually the initial person patients meet at a doctor's office and should have a pleasing personality and neat appearance. Patients frequently are under stress or pain and need to feel confident about the care they will receive, as well as be made to feel comfortable. The ability to follow directions and work efficiently, managing skills, good common sense, patience, and tact are all qualities important to the employer. Although a high school diploma and secretarial skills are the usual requirements, employers prefer to hire persons with some formal training in medical/dental secretarial work. Formal training courses that lead to a diploma, certificate or associate degree are offered by vocational-technical schools and community colleges. Useful courses in high school include English, biology, chemistry, and health, as well as courses that promote communications skills and public relations.

Outlook

As the number of doctors and health care facilities increase, so too will job opportunities for medical/dental secretaries. Also, the widespread subscription to health insurance plans has greatly increased the amount of paperwork, requiring additional office personnel.

Areas of Employment

- doctors' offices
- hospitals
- extended care facilities
- clinics
- health agencies

Schools in New Jersey

Bryman School
East Brunswick, New Jersey 08816

Burlington County College
Pemberton, New Jersey 08068

Dover Business School
Dover, New Jersey 07801

Essex County College
Newark, New Jersey 07102

Middlesex County Vocational/
Technical School
East Brunswick, New Jersey 08816

Roberts-Walsh Business School
East Orange, New Jersey 07017

6. Health Administration, Clerical and Support Services

Medical Record Administrator

079.167-014

For every hospital patient who receives medical services, a detailed medical record is maintained. The record contains information on the patient's medical history, the illness/injury, X-rays, lab reports, treatment and medication. The medical record administrator is responsible for maintaining those records and developing the plans and methods for storing and retrieving that information. The records are important not only for keeping track of patients, but for evaluating the hospital's performance, studying the treatment of disease, and future planning. Therefore, statistical analysis of data is another important function.

Personal Qualifications and Training

Since the work revolves around the gathering and organizing of information, the ability to work accurately and alertness to detail are important for this work. Also, as an administrator, one must work well with people and have abilities in planning and management. A background and interest in business, mathematics and the sciences is advantageous.

Specialized college programs that lead to a degree in medical record administration are available at a number of colleges and universities. These are four-year programs, but a person with a bachelor's degree with prerequisite requirements may qualify for a one-year certificate program. Medical record administrators are registered by the American Medical Record Association after passing their examination.

Outlook

Medical record keeping has grown and become more complex and extensive because of increased number of patients, government regulations, research needs and insurance requirements. Therefore, job prospects are good for well-qualified persons, especially in larger institutions. There are increasing needs for experienced people to work as consultants in outpatient clinics, community health centers and health maintenance organizations to design and develop information systems.

Areas of Employment

- hospitals
- clinics
- health maintenance organizations
- nursing homes
- insurance companies

Schools in the Nearby Area

Temple University
Philadelphia, Pennsylvania 19122

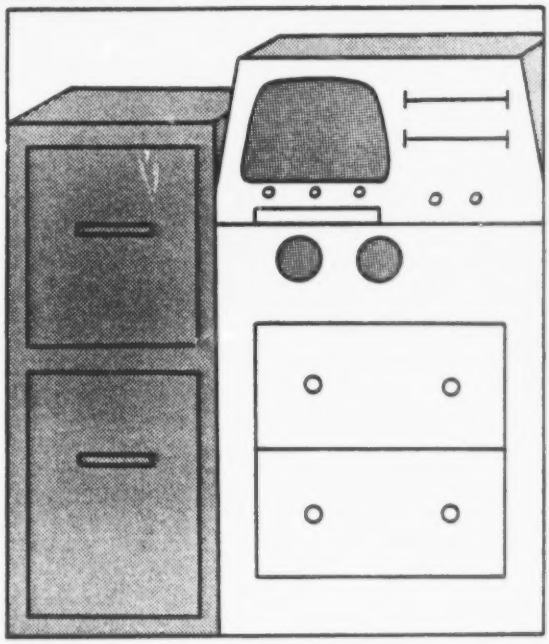
For Additional Information

American Medical Record Association
875 North Michigan Avenue
Suite 1850
Chicago, Illinois 60611

6. Health Administration, Clerical and Support Services

Medical Record Technician

079.367-014



Maintaining the medical information system is the function of medical record technicians. In larger institutions, they work under the supervision of a medical record administrator. In a small hospital or clinic, the medical records department may be headed by an experienced medical record technician. Duties include transcribing medical reports, analysis and coding of information, maintaining registries, reviewing and updating records and compiling statistics. The medical information is used by different health personnel in a variety of ways. Therefore, the technician must be knowledgeable about the cataloging, storing, and retrieval of that information.

As the practice of medicine and health care delivery has become more sophisticated, the work of medical record technicians has become more technical. Hence, employers prefer to hire applicants with formal training and knowledge of medical terminology and practices.

Personal Qualifications and Training

Accuracy, attention to detail, and analytical abilities are important assets for this type of work. High school courses in biology, mathematics and office practice are useful. Two-year associate degree programs or ten-month certificate programs in medical record technology are offered by a number of colleges and schools. Graduates from accredited programs may take a registry examination given by the American Medical Record Associates to be recognized as an Accredited Record Technician.

Outlook

The demand for medical record technicians is expected to grow as patient numbers grow and requirements for information, such as for insurance purposes, increase. Opportunities are more favorable for people with associate degrees in this specialty.

Schools in New Jersey

Union County Technical Institute
Scotch Plains, New Jersey 07076

Hudson County Community College
North Bergen, New Jersey 07047

Camden County College
Blackwood, New Jersey 08012

Medical Record Clerk

245.362-010

Medical record clerks perform more of the clerical functions of the medical records department--filing, typing, transcribing and assembling information. They work under the supervision of the medical record administrator and/or medical record technician. This is an entry level position that requires a high school diploma and secretarial skills. Training is on the job. With experience and some additional formal training, medical record clerks may advance to the position of medical record technician.

For Areas of Employment and Additional Information see
MEDICAL RECORD ADMINISTRATOR

7. Health Education and Community Services

Environmental Health Technician
(Pollution Control Technician)
(Industrial Hygiene Technician)

Occupational Health and Safety Professionals
Industrial Hygienist
Safety Engineer
Occupational Health and Safety Engineer

Public Health Educator

Sanitarian
(Public Health Sanitarian)
(Environmentalist)

Vocational Rehabilitation Counselor

7. Health Education and Community Services

Environmental Health Technician
029.261-014
(Pollution Control Technician)
(Industrial Hygiene Technician)

This group of health technicians comes under different job titles depending on their area of work. They may work as a member of the industrial health team or assist environmental health engineers. They do much of the field work and laboratory testing of environmental pollutants found in air, water, soil, and food. Laboratory analysis of materials involves chemical, bacteriological, physical or microscopic tests, and the use of a variety of analytical and quantitative instrumentation. Field investigations may include collecting water samples from rivers and streams or water treatment plants, collecting emissions from smoke stacks, setting up equipment to monitor air quality, or collecting data for research studies. Working with engineers, they investigate conditions of water supply facilities, food production plants, or manufacturing plants, and prescribe methods to improve or control the situation. Part of the work therefore includes writing reports and communicating ideas to others. These activities help to protect the public from substances in the environment that may endanger health.

Personal Qualifications and Training

A keen sense of observation, patience, and mechanical abilities are important qualities. A large part of the work requires the installation, operation, and maintenance of testing instruments. In addition, one should have skills in analyzing and interpreting information and be able to communicate effectively, verbally and in writing. Some jobs may involve extensive time outdoors, so preference for travel and outdoor work may be important. Useful high school courses include the social sciences as well as biology, chemistry, physics, and mathematics. Associate degree programs in public health inspection technologies, environmental health technologies, and industrial hygiene technologies are being developed and offered by community colleges. Since this is a relatively new field, many technicians currently employed have two years of community college or technical school education in related areas that include courses in the social, physical, and biological sciences.

Outlook

Concern for protecting the environment and public health, and new research evidence linking pollutants to disease, has created a high demand for trained technicians in this field. This field has grown appreciably in recent years and is expected to continue.

Areas of Employment

- industry
- governmental health agencies
- government regulatory agencies
- research facilities
- manufacturing plants
- food service establishments

For Additional Information

New Jersey Department of Public Health
Trenton, New Jersey 08825

Schools in New Jersey

Middlesex County College
Edison, New Jersey 08817

Salem County College
Penns Grove, New Jersey 08069

Somerset County College
Somerville, New Jersey 08873

7. Health Education and Community Services

Occupational Health and Safety Professionals

079.161-010 Industrial Hygienist
012.061-014 Safety Engineer
168.167-062 Occupational Health and Safety Engineer

Health and safety of employees in the workplace is a major concern of industry, government agencies, and insurance companies. It is estimated that 100,000 Americans die each year from work-related illnesses. In 1978, there were 2.2 million workplace injuries of a disabling nature; among those, 80,000 were permanent disabilities. Work-related accidents resulted in 13,000 deaths. These numbers highlight the need to reduce accidents and illness, identify sources of hazards and potential disease-causing agents, and develop new techniques for detecting environmental threats to health.

One area of special concern is that of controlling toxic materials that cause chronic illnesses, such as lung diseases and cancer, a disease that frequently does not show up for many years (often years after an employee has left the job). Asbestos, benzene, and coal dust, for example, have made media headlines and have been named in court suits instigated by disabled workers or surviving relatives. Some of these health risks were previously unknown and have come to recent attention only because of improved detection methods and extensive research.

Also, concern for a safer work environment has led to the establishment of new regulations, safety procedures, and monitoring systems. Perhaps the landmark event is the passage of the Occupational Safety and Health Act in 1970. A number of new jobs have been created to insure that health and safety standards are met. They involve the evaluation of the workplace and helping to eliminate hazardous conditions.

Industrial Hygienists are concerned with industrial hazards, such as air and noise pollution and radiation, and work to eliminate conditions that create health risks. Their work will vary depending on their employer -- industry or government agency. Some duties may include: conducting programs to enhance safety or prevent disease; collecting samples of dust, vapors or chemicals for testing; checking for safety of equipment, lighting, or ventilation systems; testing for noise levels that may cause hearing loss; checking levels of radiation exposure; instructing employees on safety procedures; and working with engineers and occupational physicians to develop procedures or control measures to improve the work environment.

Safety Engineers focus on the machinery and equipment used in the workplace and manufacturing processes. They utilize knowledge from various disciplines that include engineering, chemistry, psychology, and industrial health and safety laws. Their task is to develop and implement safety programs to prevent accidents. By understanding the machinery, how they are to be used, and the way workers do the job, safety engineers can then determine methods to reduce hazards. They may recommend modifications of equipment or addition of safety guards. They also conduct studies of accidents and suggest changes in work procedures or placement of equipment. Some of their duties include worker education, teaching safety precautions, and creating awareness of potential dangers.

Occupational Health and Safety Engineers are employed by government agencies to inspect places of employment to insure that government standards are met. They examine the work environment, machinery, and equipment to determine that conditions are safe and do not endanger health. An inspection tour may include interviews with employers and employees, observing the work process and examining injury reports. They may propose new work methods or suggest corrective measures. Employers who fail to meet standards are subject to penalties or law suits. These engineers very frequently specialize in inspecting particular types of equipment or machinery or conduct inspection in specific areas, such as transportation, mining, construction, etc.

Personal Qualifications and Training

This type of work requires persons who have a keen sense of observation and are good problem solvers. Since people tend to be suspicious or hostile toward those who monitor their work, occupational health and safety professionals should be able to work and communicate well with people and display tact and patience. Preparation for these jobs will vary depending on the industry and the employers. A bachelor's degree in engineering, biology, chemistry, occupational health and safety, radiation safety, or industrial hygiene are usually a prerequisite. Some positions may require a specialized graduate degree. Positions with government agencies may also require passing an examination.

Outlook

With increased awareness of the importance of good health and safety practices, laws and court decisions that place responsibility on employers to protect workers from hazards, and productivity and monetary loss resulting from injuries and illnesses, job opportunities in this field are good. Most job openings are located in industrial centers and large cities. The rate of growth of this relatively small field will also depend on future regulations and the degree to which government pursues enforcement.

Areas of Employment

- industry
- government agencies
- insurance companies
- manufacturing associations

Schools in Nearby Area

(undergraduate degree programs in Industrial Hygiene)

Johns Hopkins University
Baltimore, Maryland 21250

Quinnipiac College
Hamden, Connecticut 06518

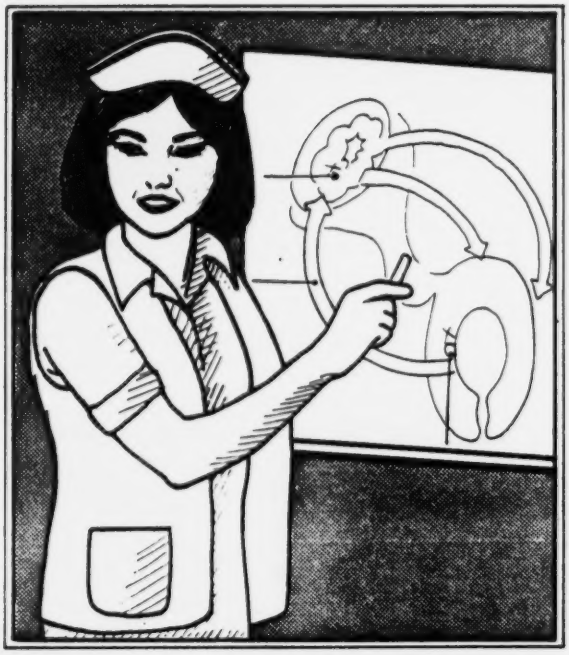
For Additional Information

American Industrial Hygiene
Association
475 Wolf Ledger Parkway
Akron, Ohio 44311

American Society of Safety
Engineers
850 Busse Highway
Park Ridge, Illinois 60068

Environmental Management
Association
1701 Drew Street
Clearwater Park, Florida 33515

7. Health Education and Community Services



Public Health Educator

079.117-014

Although the idea of preventive health care is not new, there is today even greater emphasis on prevention. Enormous benefits result when people are more knowledgeable about maintaining good personal health and seek early treatment of disease before it becomes acute. Especially with the steep rise in medical care costs, good health is related to the country's economy both in worker productivity and money saved.

Public health educators are responsible for educating all segments of the community in matters that concern health and safety. They develop and present health education programs for community groups, industry, and businesses. They conduct research and survey the health needs of the community and determine the kinds of health problems that need to be addressed. Such information is used to guide the establishment of programs to meet those special needs. They may help to coordinate the various health related activities between professional organizations, civic groups, and health agencies.

The work also involves preparation of materials for presentations, distributing health information pamphlets and employing various communication media to convey information to the public. Some health problems may be unique to an area so public health educators need to develop an in-depth understanding of the environment and people they serve. Often they may need to alert the public about health hazards or dispel fears created by misinformation or misinterpretation of scientific/medical information.

Personal Qualifications and Training

Work in this area requires the combined skills of teaching, leadership and communications, and public health knowledge. An interest in working with people and concern for good health are also important qualities. High school courses in the sciences, health, and communications are good preparation. A bachelor's degree in community health education is a minimum requirement, but a master's degree is preferred for many positions.

Outlook

This small field has expanded rapidly in recent years and reflects the growing importance of health education. The need for qualified health educators is expected to increase.

Areas of Employment

- federal, state or local health agencies
- voluntary health agencies
- health planning agencies
- schools and colleges
- hospitals
- clinics
- industries

For Additional Information

Society for Public Health Education
703 Market Street
San Francisco, California 94103

Schools in New Jersey

Rutgers - The State University of New Jersey
College of Arts and Sciences
Newark, New Jersey 07103

Cook College
New Brunswick, New Jersey 08903

Livingston College
New Brunswick, New Jersey 08903

Stockton State College
Pomona, New Jersey 08240

William Paterson College
Wayne, New Jersey 07470

7. Health Education and Community Services

Sanitarian
079.117-018
(Public Health Sanitarian)
(Environmentalist)

Sanitarians are concerned with the quality of the air we breathe, water we drink, and food we eat. They design and implement plans and methods to insure that pollutants in the environment do not jeopardize the public's health. A major part of their work entails investigations of water supplies, sewage treatment facilities, garbage disposal, food service facilities, and food processing plants. They inspect places that serve the public such as restaurants, hotels, and motels to make sure that established health standards are maintained. Signs of cockroaches or rodents in a restaurant, for example, are indicators of unsanitary conditions and a potential source of disease. Places which serve large numbers of people, such as schools and institutions, need to be frequently checked for possible sources of health problems.

Other aspects of a sanitarian's work involves educating the public in the maintenance of a healthy environment and helping people solve poor sanitation problems. If a food processing plant does not meet health codes, the sanitarian may help the operator identify the source of the problem and develop plans to improve conditions. They also serve as a member of a public health team to study ways to control or prevent disease by gathering and analyzing data.

Personal Qualifications and Training

Good observational and problem solving skills and working well with people are important for work in this area. Strong interest and proficiency in the sciences and public health are also necessary. High school preparation should include courses in the sciences, mathematics, and the social sciences. A bachelor of science degree in biology, chemistry, environmental science, or public health is prerequisite for beginning positions. Some positions require a master's degree in environmental health. Sanitarians in New Jersey must be licensed.

Outlook

The job outlook in this field is good. Increased opportunities in this area will be associated with population growth and government's regulation of sanitary standards. Establishment of new regulations and health standards require additional personnel to insure that these laws and regulations are adhered to. Also, advances in scientific knowledge have brought to attention new public health concerns as well as new methods to solve those problems. These factors all contribute to the growth of this profession.

Areas of Employment

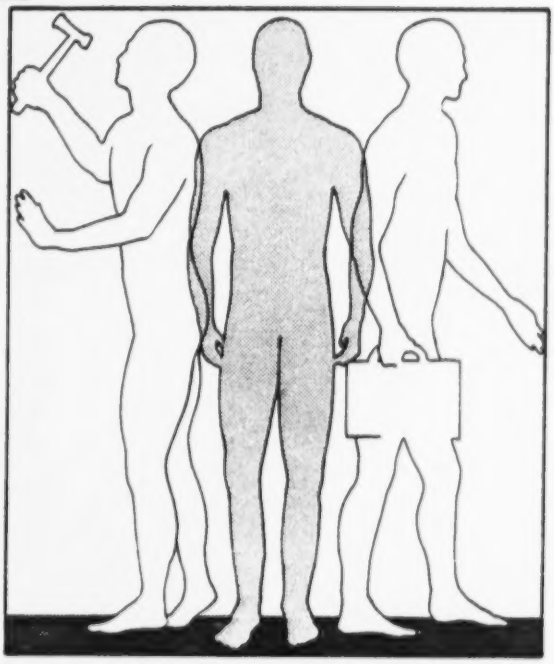
- federal, state and local health departments
- food products manufacturers and processors

For Additional Information

National Environmental Health Association
1200 Lincoln Street
Denver, Colorado 80203

Environmental Management Association
1701 Drew Street
Clearwater, Florida 33515

7. Health Education and Community Services -



Vocational Rehabilitation Counselor

045.107-042

Our sense of worth and feeling that we are active members of society is linked to our ability to work. For the disabled, rehabilitation goes beyond recovering from, or compensating for, the results of illness or accident. It extends to doing useful and meaningful work and living as normal a life as possible. Vocational rehabilitation counselors play a vital role in assisting the physically or mentally disabled enter or re-enter the world of work.

A vocational rehabilitation counselor begins by determining the extent of the client's disabilities, his/her interests, and what he/she can do. The evaluation includes interviews with the client and the client's health care team, and a variety of aptitude and interest tests. Then the counselor matches available jobs with the client's interests and abilities. Often training or retraining is required and arranged accordingly. Clients may also need counseling to help them adjust to their jobs. In addition to counseling clients, the counselor works with businesses in the community to interest and encourage them to employ the disabled. In many instances, the community needs to be educated about the benefits derived from helping the disabled become more self-sufficient and the ways in which it can support those efforts. Hence, public relations is another role of the counselor.

Personal Qualifications and Training

Understanding of people and communicating well, patience, and leadership qualities, are important for a career in rehabilitation counseling. One should plan a well-rounded program of college preparatory courses in high school. One may enter this occupation with a bachelor's degree in psychology or sociology. However, a master's degree in vocational rehabilitation counseling is preferred by most employers. Positions of greater responsibility and advancement opportunities depend on a graduate degree. The National Commission on Rehabilitation Counselor Certification certifies counselors who pass the certification exam.

Outlook

This occupation has expanded rapidly in the past decade. The growth is related to: 1) the public's increased concern for the disabled and helping them gain greater independence, and 2) government financing or rehabilitation programs. The trend is expected to continue in the future although the increase may not be quite as rapid as in the past. Nonetheless, more jobs are available than there are trained personnel.

Areas of Employment

- state and federal agencies
- rehabilitation centers
- hospitals
- public schools

Schools in New Jersey

(Graduate Training Programs)

Seton Hall University
South Orange, New Jersey 07074

For Additional Information

American Rehabilitation Counseling Association
1605 New Hampshire Avenue, NW
Washington, D.C. 20009

National Rehabilitation Counseling Association
1522 K Street, NW
Washington, D.C. 20005

8. Information and Communication Services

Biological Photographer
(Biomedical Photographer)

Medical Communications Scientist
(Medical Communications Specialist)
(Science and Technical Writers)
(Health Information Specialist)

Medical Illustrator
(Biomedical Illustrator)

Medical Librarian
(Health Science Librarian)

8. Information and Communication Services

Biological Photographer
(Biomedical Photographer)
143.362-010

Still photographs and motion pictures are used in a variety of different ways in the health care field. Photographs of microscopic cells are used in diagnosis of disease or teaching. Motion pictures of tissue growth are used in research. Pictures taken at high speed or with infrared light enable investigators to "see" and record reaction or phenomena invisible to the unaided eye. More familiar to us are films, slides, and photographs used in training and classroom demonstrations.

Biological photographers prepare and produce the many different types of communication and information materials in health care and the health sciences. Their work may extend from working with researchers on experimental projects to planning and directing the production of audiovisual programs for public information purposes. Biological photographers frequently specialize in particular areas such as: photography of disorders and injuries of the eye; photography of microscopic objects; production of motion pictures on medical topics; or photography of surgical procedures.

Personal Qualifications and Training

Biological photography offers an opportunity to apply one's talents in photography in health care communications. In addition to photography, one should be knowledgeable in the sciences and communication techniques. Personal qualities should include observation skills, patience and the ability to interact well with others. Most biological photographers have entered the field through on-the-job training. As the work requires an amount of specialized knowledge, a number of programs have been established that offer associate degrees or bachelors' degrees in biological photographic communications. Biological photographers who pass a certifying exam are certified by the Biological Photographic Association.

Outlook

The employment of biological photographers has increased as the health care field has expanded. In addition to technical education materials, there is an increased emphasis on providing information to the public. The public, in general, is better educated, desires to be more informed about advances in medicine, and has a greater interest in personal health care. Photographers with specialized biomedical experience are expected to have good opportunities in these times when knowledge is advancing at a rapid rate and where information needs to be continuously updated. Moreover, advances in photography have extended its application in a greater number of different teaching and research settings.

Areas of Employment

- hospitals
- clinics
- medical schools
- research institutes
- graphic arts production companies
- pharmaceutical firms
- textbook publishers

Schools in the Nearby Area

Germain School of Photography
New York, New York

Rochester Institute of Technology
Rochester, New York

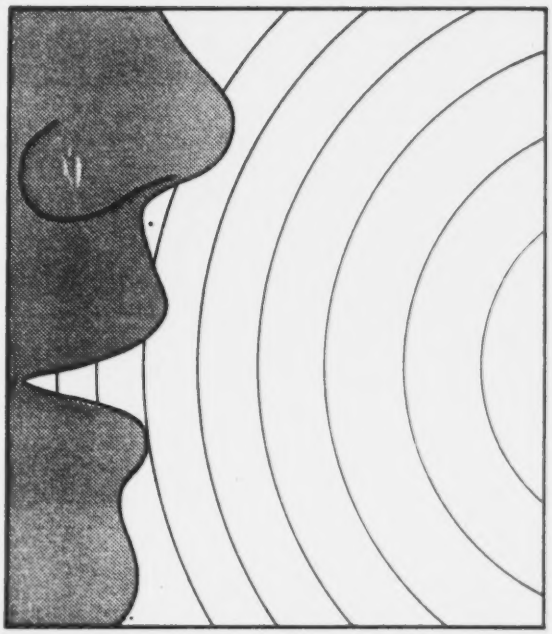
West Pennsylvania Hospital
Pittsburgh, Pennsylvania 62901

For Additional Information

Biological Photographic Association
Box 2603, West Durham Station
Durham, North Carolina 27705

8. Information and Communication Services

Medical Communications Scientist
(Medical Communications Specialist)
(Science and Technical Writers)
(Health Information Specialist)



Medical communications scientists employ the various communications channels -- journals, newspapers, magazines, radio, television, film, and exhibits -- to provide information to health educators, health care professionals, and the public. They report on new developments in medical research or health care delivery. They develop materials describing the services of a hospital or clinic or produce instructional programs on new treatment procedures. The type of communications medium they use and the subject matter depends on their particular work setting and the information to be conveyed. As translators and transmitters of information, they work closely with health care professionals to gain knowledge of the topic and develop the presentation strategy.

Some medical communications scientists specialize in producing materials and scripts for audiovisual programs, while others specialize in the writing of materials for print publications. Depending on their specialization and the nature of their work, they may be classified as technical or science writers or health information specialists. Technical writers, for example, write for health professionals, presenting articles and reports on new scientific and technical developments. Science writers, on the other hand, write on the same topics but focus the presentation for the general public. Health information specialists are employed by health organizations to inform the public about the organization's services as well as its accomplishments. The information may be presented in a pamphlet or as a television special.

Personal Qualifications and Training

The ability to write and speak effectively is critical for this profession. Moreover, one should be skilled in the analysis and synthesis of new information and understand the audience to be addressed. Medical communications is a relatively new field, and persons who work in it have come from a variety of backgrounds, with degrees in English, journalism, the sciences, communications, or a combination of several areas. More recently, programs have been established that lead specifically to a bachelor's degree in medical communications.

Outlook

Medical communications is an emerging field and is expected to expand significantly in the future. Persons with a strong technical background and creative in the use of communications techniques and media should be in high demand. The demand is related to the growth of information and the need for effective training materials in health care education, continuing education materials for personnel in the field, and keeping the public informed. Also, improvements in health care and delivery systems will depend upon the transfer of knowledge gained from research to practitioners who apply that knowledge.

Areas of Employment

- hospitals
- health care facilities
- medical schools
- health organizations
- public agencies
- publishing houses
- news media

Schools in New Jersey

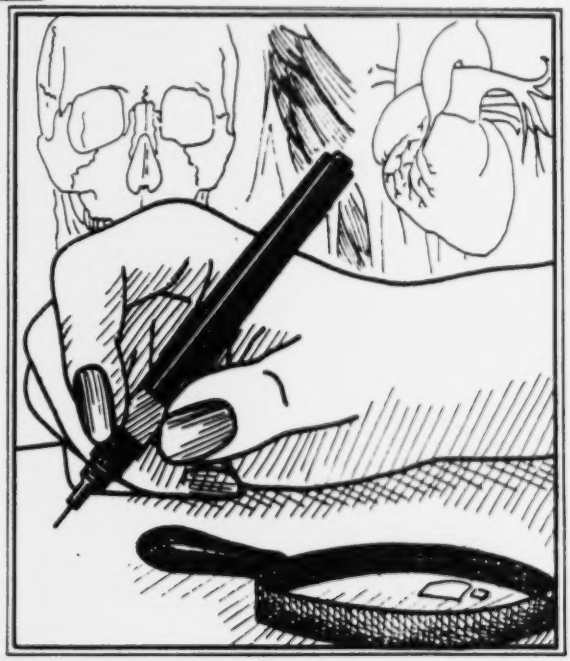
Stockton State College
Pomona, New Jersey 08240

For Additional Information

American Medical Writers Association
5275 River Road
Bethesda, Maryland 20016

Health Sciences Communications Association
2343 N. 115th Street
Wauwatosa, Wisconsin 53226

Medical Illustrator
(Biomedical Illustrator)
141.061-026



Medical illustrators help the medical and health care community communicate their ideas through artwork. They work with physicians, research scientists, medical educators, and writers to produce drawings, illustrations, models, and audiovisual materials. Their artwork may be found in research journals, medical texts, public information publications, television shows, exhibits, and other types of medical and health education materials. Because scientific concepts are often complex and intricate, visual presentations are especially useful, if not necessary, for conveying the information.

Medical illustrators play an important role in the education of both the scientific community and general public. With health care personnel requiring higher levels of training and the expansion of continuing medical education programs, the demand for medical illustrators has increased. Also, with advances in educational technology such as in the audiovisual area (filmstrips, video disks and tapes, etc.), visual presentations are being applied in new and different ways.

Medical illustration offers a unique opportunity to combine one's artistic and creative skills with an interest in science and medicine.

Personal Qualifications and Training

Artistic abilities, especially drawing, and observation skills, are the basic qualifications for this profession. In addition, a good scientific background with an emphasis in biology is important. Programs in medical illustration are offered by a small number of medical schools and are four to five years in length. Master's degree programs in medical illustration are also available.

Outlook

Although this is a relatively small profession, skilled medical illustrators are in high demand. The demand is related to the increased

educational needs of the health care community--training materials, textbooks, models and diagrams. Also, the services of medical illustrators are utilized in a wider variety of communication mediums. They work in full-time positions or as free lancers.

Areas of Employment

- hospitals
- clinics
- medical schools
- research institutes
- graphic arts production companies
- pharmaceutical firms

For Additional Information

Association of Medical Illustrators
5820 Wilshire Blvd.
Los Angeles, California 90026

Schools in the Nearby Area

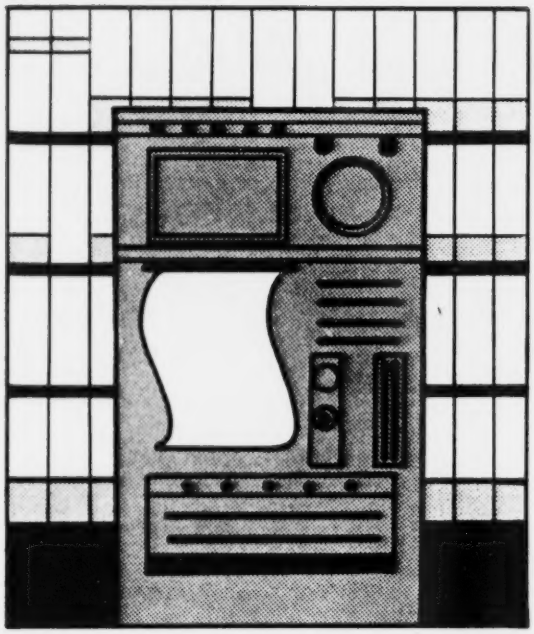
Johns Hopkins School of Medicine
Dept. of Art as Applied in Medicine
Baltimore, Maryland 21205

Rochester Institute of Technology
College of Fine and Applied Arts
Rochester, New York 14623

University of Rochester
Division of Medical Education/
Communication
School of Medicine and Dentistry
Rochester, New York 14642

8. Information and Communication Services

Medical Librarian
(Health Science Librarian)
100.167-022



Medical librarians are librarians who serve the health care community -- medical researchers, health professionals, students, etc. With the rapid proliferation of knowledge and new techniques for storing and accessing information, their role is critical to advancements in medicine and health care. They select and maintain materials used by health professionals in research, teaching, and up-dating their knowledge. Health science libraries are located in hospitals, medical schools, colleges, research and industrial institutions, and health agencies. While most work with scientific and technical information, some provide for the reading needs of patients and are called patient librarians.

Medical librarians have additional training in hospital and medical librarianship so that they are able to provide specialized services to the library users. They may assist users in conducting literature searches, compiling bibliographies, reviewing materials or preparing abstracts. With the increased storage of information in computers, medical librarians are increasingly involved with computerized data bases and retrieval of information from the various sources.

A more recent role is that of clinical librarianship. Here the librarian works closely with physicians, accompanying them on rounds and conferences. Based upon the information from patients' charts and other sources, the librarian then obtains materials, such as medical journal articles, research studies, case histories, etc. for the physician to use in planning and conducting patients' treatment.

The duties of a medical librarian vary depending on the size of the library. In large libraries the personnel perform more specialized tasks. Some may concentrate in cataloging, indexing, or developing classification systems. Some may be involved in research, while others prepare reviews for information bulletins distributed to the institution's staff.

Personal Qualifications and Training

Similar to other librarians, medical librarians should enjoy working both with people and information. A sense of curiosity and organizational skills are also important. Since medical librarians work with scientific information, an interest and familiarity with the sciences and health care services are useful. Also, proficiency in a foreign language is an asset. Medical librarians usually have a master's degree in library science and take additional courses in hospital and medical librarianship, approved by the Medical Library Association. Certification is granted by the Medical Library Association.

Outlook

Among the various types of specialized librarians, the opportunities for medical librarians is perhaps the greatest. This is especially true for librarians with a strong scientific and technical background with experience in information retrieval and automation. The demand in this area is related to the growth of the health care field in general and the rapid rate of increase in scientific knowledge. Also, advances in medicine are dependent on the exchange of information and research findings.

Areas of Employment

- hospitals and other health care facilities
- colleges
- universities
- public health departments
- insurance companies
- pharmaceutical firms
- research institutions

Schools in New Jersey

Rutgers - The State University of New Jersey
New Brunswick, New Jersey 08903

For Additional Information

Medical Library Association
919 North Michigan Avenue
Chicago, Illinois 60611

9. Medical Instrumentation and Machine Operation Services

Biomedical Engineer
Clinical Engineer

Biomedical Equipment Technician
(Biomedical Engineering Technician)

Electrocardiograph Technician

Diagnostic Medical Sonographer
(Ultrasound Technologist)

Electroencephalographic Technologist and Technician

Dialysis Technician

Radiologic Technologist
(X-ray Technologist)

Respiratory Therapist
(Inhalation Therapist)

Respiratory Therapy Technician

9. Medical Instrumentation and Machine Operation Services

Biomedical Engineer

Clinical Engineer

019.061-010

Our rapid advances in medical diagnosis, treatment, and research are intimately linked to developments in biomedical engineering. Ultrasound equipment, cardiac pacemakers, artificial blood vessels, computerized laboratory testing instruments--all are products of engineering applied to medicine and biology. Biomedical engineering activities range from the design of medical instruments and artificial body parts to planning hospital facilities. Professionals in this field apply engineering principles and techniques to solve problems in medicine and biology. Biomedical engineers may work with surgeons to develop new surgical tools, or they may be employed by a drug company to design automated equipment. Some work with computers to develop monitoring systems, such as those used to monitor patients undergoing surgery or to monitor astronauts in space flights.

Clinical engineers work in a hospital setting. They focus on improving the health care delivery system. Their work includes analyzing the equipment needs of the facility and how equipment can be best used so that services are performed efficiently and economically. For example, they may conduct studies to determine whether a new diagnostic machine should be purchased, weighing the factors of cost, safety and how patients and the hospital will benefit. They may be involved in redesigning or modifying equipment to meet the special needs of the hospital.

Biomedical and clinical engineers draw upon knowledge from different fields. These fields include chemistry, physics, biology and mathematics, as well as psychology and sociology. In this work, one must have a good understanding of engineering as well as medicine and be able to communicate effectively with people in the medical field.

Personal Qualifications and Training

Strong interests and abilities in the sciences and mathematics are important qualities for working in this field. In addition, good problem solving and communication skills are useful assets. Since biomedical engineering encompasses many disciplines, one's high school preparation should include the sciences, higher mathematics, English, history, and the social sciences. Typically persons enter graduate programs in biomedical engineering after completing a bachelor's degree in one of the engineering disciplines--chemical, civil, electrical, mechanical, aeronautical, or industrial. Some schools have now developed undergraduate degree programs in biomedical engineering. A few schools, including Rutgers, offer a combined Ph.D./M.D. degree program. The specialty area in which one intends to work will determine the type of training. For example, an engineer who develops artificial bone and joint parts is trained differently from one who develops information systems for medical record keeping.

Outlook

This small field has expanded very rapidly in the past few years. This growth is related to increases in health care needs and government support of research and development in biology and medicine. Also, modern hospitals today rely on the use of sophisticated instrumentation and need biomedical engineers to supervise the use and maintenance of such equipment. Whether this high rate of expansion will continue depends on a number of economic, political and social factors. Since many schools have recently established programs in biomedical engineering, significant numbers of graduates are now entering the field. Hence, competition may be keen. However, opportunities will vary depending on one's specialty area; some specialities may be in greater demand than others.

Areas of Employment

- colleges and universities
- hospitals
- research laboratories
- equipment manufacturers
- pharmaceutical companies

For Additional Information

Alliance for Engineering in Medicine and Biology
4405 East-West Highway
Bethesda, Maryland 20014

Biomedical Engineering Society
P.O. Box 2399
Culver City, California 90230

Schools in New Jersey

Fairleigh Dickinson University
Teaneck, New Jersey 07666

New Jersey Institute of Technology
Newark, New Jersey 07102

Rutgers - The State University of New Jersey
New Brunswick, New Jersey 08903

Stevens Institute of Technology
Hoboken, New Jersey 07030

UMDNJ - Graduate School of Biomedical Sciences
Newark, New Jersey 07102

9. Medical Instrumentation and Machine Operation Services

Biomedical Equipment Technician
(Biomedical Engineering Technician)

019.261-010
719.261-010

Advances in medical treatments today have come about largely because of advances in the equipment used in research, diagnosis, monitoring, and treatment. Compared to hospitals 50 years ago, hospitals today may appear like a maze of sophisticated machinery. As with any other type of machinery, they must be serviced regularly to insure perfect performance. When human lives are at stake, it is all the more critical that the equipment is dependable. Biomedical equipment technicians--BMETs--are the personnel trained to install, repair, calibrate, and maintain medical equipment and instruments. In addition to servicing equipment, they are responsible for checking the proper use of the equipment so that the staff and patients are not exposed to safety or health hazards.

The type of equipment used by a facility will of course depend on its size and specialty. The work of a BMET at a large hospital may be more specialized, such as working primarily with electronic equipment or X-ray equipment. At a small clinic the BMET may be responsible for all the equipment. Wherever the workplace, a BMET must be a good problem solver to find the source of the trouble and make the necessary adjustments or repairs, using hand or power tools and measuring devices. In addition to knowledge about biomedical equipment, BMETs need to have an understanding of medical terminology, human anatomy and physiology, and safety regulations. They are frequently called upon to modify equipment to suit the needs of the hospital or to provide advice on purchasing of new equipment.

Not all BMETs work in hospitals or health care centers or clinics. Some work for equipment manufacturers, sales companies, medical research organizations, or contract maintenance companies. Working for a sales company, for example, a BMET's role may be more that of an educator, instructing others on the function and use of the equipment. Working for a manufacturing company, a BMET may be involved in equipment design and production, as well as writing instruction manuals.

Personal Qualifications and Training

Interest and aptitude in electronics and math are important for this occupation. Good manual dexterity, working neatly and orderly, and attention to details are also highly desirable qualities. BMET training may be attained through one-year certificate or two-year associate degree programs offered by community colleges or technical institutes. Also, an associate degree in electronics technology with courses in biomedical equipment can qualify one for work in this field. Persons currently employed as electronic technicians can, with additional biomedical equipment course work, qualify to work as BMETs. BMETs who satisfy the training and work experience requirements and pass the examination may be certified by the Association for the Advancement of Medical Instrumentation.

Outlook

This is an expanding field with diverse opportunities. However, it has only been within the past decade that biomedical equipment technicians have been recognized as a distinct and separate profession. Formerly, the functions were performed by electronics technicians or medical equipment repairers. Because of the specialized and sophisticated nature of biomedical equipment today, as well as stricter hospital safety regulations, the need for persons especially trained in the area has been found to be essential. The demand for qualified personnel for this emerging field has been acute. Schools and colleges are just beginning to develop courses and programs.

Areas of Employment

- hospitals
- health care centers
- manufacturing firms
- sales and distribution firms
- medical research organizations
- government agencies

Schools in New Jersey

County College of Morris
Dover, New Jersey 07801

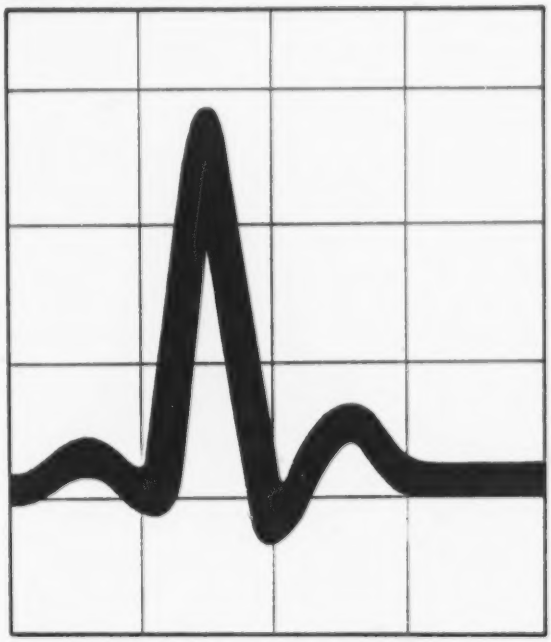
Middlesex County College
Edison, New Jersey 08817

For Additional Information

Society of Biomedical Equipment
Technicians
1901 North Fort Meyer Drive,
Suite 602
Arlington, Virginia 22209

9. Medical Instrumentation and Machine Operation Services

Electrocardiograph Technician
078.362-018



We are all familiar with doctors using the stethoscope to measure our heartbeat. Another and more sensitive method to examine heart activity is the electrocardiograph. Electrocardiograph (EKG) technicians are specially trained to operate this instrument and test patients. The instrument detects electrical changes that occur during a heartbeat and translates that information onto a graphic record that appears as line tracings on paper.

Electrocardiographic technicians must understand the equipment as well as the anatomy of the chest and heart. Because the instrument is so sensitive, it must measure accurately and provide reliable information for doctors to make proper diagnosis of heart abnormalities. A good electrocardiogram depends on technicians knowing where to correctly place the electrodes on the chest. EKG technicians must be able to detect possible errors in recording and make the necessary corrections or adjustments on the instrument. Some also operate other machines to obtain vectorcardiograms (three-dimensional traces), and phonocardiograms (recordings of heart valve sounds as blood flows through).

Personal Qualifications and Training

Mechanical abilities and attention to details are important traits for this occupation. Useful high school courses are biology, health, and typing. Most EKG technicians are trained on the job following high school graduation. This training may vary from one month to a year depending on the complexity of tests performed at the facility. Formal one- or two-year training programs are offered at a number of vocational schools and community colleges as well as the Armed Forces.

Outlook

This field is growing as health care services expand. Since heart disease is a major disease in this country, there is increased interest in preventative care and early diagnosis. As a result, the services of trained technicians are needed.

There are also opportunities for advancement to other technologist and supervisory levels. New developments in biomedical technology offer possibilities in operating more sophisticated instruments and performing new types of tests.

Areas of Employment

- hospitals
- offices of cardiologists

For Additional Information

American Hospital Association
840 North Lake Shore Drive
Chicago, Illinois 60611

9. Medical Instrumentation and Machine Operation Services

Diagnostic Medical Sonographer
(Ultrasound Technologist)

078.364-010

The use of high frequency sound waves in medical diagnosis is relatively new but has grown rapidly. Sound waves are used to produce an image of internal body organs on a TV screen. Because the scanning procedure is simple, painless, and does not have the potential hazards of radiation, it is beginning to replace X-rays for diagnosing illnesses and injuries.

Diagnostic medical sonographers operate the equipment to produce the ultrasound pattern which is in turn converted into a visual image or a paper printout for a permanent record. Also, photographs may be taken of the image on the screen to serve as a record. Operating this equipment requires specialized training in engineering as well as anatomy and physiology. In order to obtain an adequate image for physicians to make a diagnosis, one must be able to recognize body structures and scan the appropriate parts.

The technology of ultrasound has permitted physicians to perform delicate operations, such as on fetuses while still in utero. It guides physicians as they work allowing them to "see" what they are doing. In these operations, the technologist works closely with the other members of the health care team in planning the procedures and selecting the appropriate equipment to use.

Personal Qualifications and Training

An analytical mind, good problem solving skills and enjoyment of working both with machines and people are important qualities for this profession. A background in biology, physics, and mathematics is good preparation. At one time diagnostic medical sonographers were trained on the job. But the increasing complexity of the machines requires technologists with more extensive training. Two-year associate degree programs are offered by community colleges and a few universities offer a four-year bachelor's degree program. Sonographers are registered by the Society of Diagnostic Medical Sonographers.

Outlook

There has been a shortage of trained technologists in this field, and it is predicted that the demand will remain high. Until recently ultrasound technology has been used primarily in obstetrics. Now its use has expanded into most areas, and so the need for trained technologists is also expanding.

Areas of Employment

- hospitals
- related health care facilities
- college teaching

Schools in the Nearby Area

State University of New York's
Downstate Medical Center
Brooklyn, New York 11203
(B.S. degree)

For Additional Information

Society of Diagnostic Medical
Sonographers
P.O. Box 31782
Dallas, Texas 75231

9. Medical Instrumentation and Machine Operation Services

Electroencephalographic Technologist and Technician

078.362-022

Among the various tests used to diagnose brain disorders (e.g., tumors, strokes, or head injuries), is the electroencephalogram. This test is a measurement of brain wave activity made by recording the electrical impulses from the brain. The record produced is a graphic tracing on paper.

To perform the test, the electroencephalographic (EEG) technician places small electrodes on the patient's scalp, operates the EEG machine, and monitors the tracing. As the test is in progress, the EEG technician must pay careful attention to the patient and how the machine is working. Electrical interferences from other sources may result in an inaccurate record. The record and a written report are then submitted to the neurologist or electroencephalographer (a doctor who specializes in electroencephalography) who makes the diagnosis.

Because of the very sensitive nature of the test, the technician must have a good understanding of the instrument to properly select the controls as well as make necessary repairs. Life and death decisions often rest on EEG recordings, so EEG technicians must be alert to details and be able to detect possible problems with the equipment.

EEG technologists perform similar tasks. However, they have had more detailed training and experience and are more knowledgeable about the equipment and procedures. They also have administrative duties such as supervising the activities of the department and technicians and maintaining records.

Personal Qualifications and Training

Interest and ability to work with electronics, manual dexterity and good vision are important qualities for work in this area. One should also be able to respond quickly to emergencies. Biology, health, and mathematics courses in high school are good preparation. Most EEG technicians are trained on the job following high school graduation. Formal training which includes classroom instruction and laboratory work of one or two years is available through some hospitals, medical schools, or community colleges. As medical instrumentation becomes more complex and sophisticated, technicians will need more extended training. With work experience and additional training, EEG technicians advance to the technologist position. EEG technologists with at least one year of training and one year of experience may take a registration test given by the American Board of Registration of Electroencephalographic Technologists to become a registered EEG technologist.

Outlook

The demand for EEG technicians/technologists is expected to continue to expand. Advances in diagnostic procedures and instrumentation and an increasing population, requiring medical services, will create new job opportunities.

Areas of Employment

- hospitals
- offices of neurologists or neurosurgeons

For Additional Information

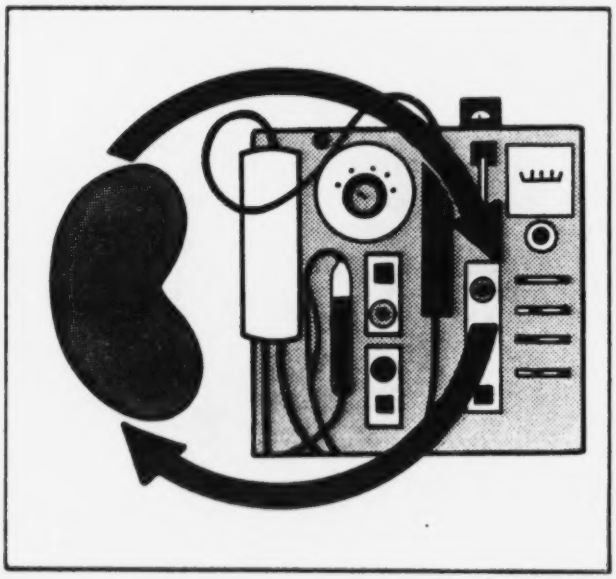
American Hospital Association
840 North Lake Shore Drive
Chicago, Illinois 60611

Council on Medical Education
(of the A.M.A.)
535 N. Dearborn Street
Chicago, Illinois 60610

9. Medical Instrumentation and Machine Operation Services

Dialysis Technician

078.362-014



The development of the artificial kidney machine has provided a life support system for persons suffering from kidney disease. Moreover, it has enabled them to lead a relatively normal life. Artificial kidneys, or dialysis machines, are like giant bathtubs designed to remove waste products from the blood. Several times a week patients are connected to the machines which circulate their blood through semipermeable membrane tubing. As the blood flows through, the metabolic waste products diffuse into the fluids surrounding the tubing. This "cleansing" of the blood requires four to six hours.

Dialysis technicians, working under a supervising nurse, prepare the patient for the dialysis and monitor the process. They also set up the machine, mix the solutions, and sterilize the equipment used. They must insure that the fluid is at the proper strength and temperature and that the equipment is functioning normally. Periodically they take readings of the patient's blood pressure and perform tests to determine the condition of the blood.

Personal Qualifications and Training

Alertness, good manual dexterity, and care to details are important traits for this work. Since patient care is a large part of the duties, dialysis technicians should be able to relate well to people. Many dialysis technicians are persons who have worked in the health care area, such as practical nurses or medics from the military. They receive the specialized training on the job, supervised by doctors and other experienced personnel. Persons who are high school graduates may qualify for the training programs offered at dialysis facilities. Training is approximately three months. A number of colleges offer certificate or associate degree programs. After one year of dialysis experience, they may take the certification examination offered by the Board of Nephology Examiners, Nursing and Technology to become a certified dialysis technician.

Outlook

Kidney dialysis is a relatively new type of treatment that has grown most rapidly during the past decade. Much of this has come about since 1972 when a law was enacted to provide for the cost of kidney dialysis and care of persons with end-stage renal disease. Dialysis facilities are expected to increase to serve the growing population. Also, as there are more elderly, the incidence of kidney problems will rise. Although new techniques have been developed for patients to perform dialysis at home, there remains a need for dialysis technicians to service those requiring in-patient and out-patient treatment.

Areas of Employment

- hospitals
- renal dialysis facilities

Schools in New Jersey

Bergen Community College
Paramus, New Jersey 07652

For Additional Information

American Association of Nephrology
Nurses and Technicians
6900 Grove Road
Park Ridge, Illinois 60068

9. Medical Instrumentation and Machine Operation Services

Radiologic Technologist
(X-ray Technologist)
078.362-026

Radiation has medical applications both as a diagnostic procedure and for treatment. Persons operating radiographic equipment for diagnosis are called radiographers. Radiation therapy technologists, on the other hand, operate machines that produce radiation for treatment purposes.

Radiographers

Many of us have at one time or another had X-rays taken for fractures, other injuries, or illness. Pictures are made with the use of ionizing radiation that passes through the body onto photographic film to produce an image of the internal structures. Radiographers, working under the supervision of the physician, prepare the patient, take the X-rays, and process the film. They must be knowledgeable about human anatomy in order to correctly position the body part to be examined and adjust the distance of the machine so a precise picture can be obtained. They must also be well versed on the principles of radiation and the equipment in order that the amount and length of exposure will produce a distinct radiograph. Physicians rely on good X-rays to make an accurate diagnosis. Because excessive radiation is potentially harmful, the machine must be carefully controlled so that only a minimum amount of radiation is used. Also, unaffected parts of the patient's body must be shielded with lead coverings. Hence, much care is necessary in performing tasks associated with X-rays.

Radiation Therapy Technologist

A number of different forms of cancer can be successfully treated with radiation therapy. Radiation therapy technologists have the responsibility of administering the treatment. They work under the supervision of the physician (therapeutic radiologist or radiation oncologist). Operating equipment such as high-level energy linear accelerators and particle generators, they expose the area to be treated with ionizing radiation. The correct dosage must be precisely controlled and correctly delivered as prescribed. Because normal tissue can be easily damaged, the technologist must take every precaution to insure proper functioning of the machine to protect the patient, as well as the hospital staff. During the course of treatment, the patient must be carefully monitored for possible signs of adverse reactions.

Radiation therapy technologists work with patients who often are quite distressed about their condition. Technologists should possess a reassuring manner to help patients feel calm and comfortable during treatment.

Personal Qualifications and Training

A critical mind, good manual dexterity, and working well with the sick or injured are important qualities for work in this area. High school courses should include mathematics and science. Training programs vary from two to four years. Two-year training programs are offered by hospitals which confer a certificate and colleges which confer an associate degree.

Four-year bachelor's degree programs are offered by colleges and universities. Following graduation from an approved program, radiologic technologists may take the registration examination given by the American Registry of Radiologic Technologists. New Jersey requires that X-ray practitioners be certified either by passing the state certification exam or the registry exam.

Outlook

This area is expanding as with other areas in health care. Also, X-rays are increasingly used for diagnosis and treatment. However, because of the large number of training programs, graduates may find competition for the jobs. This is especially true in areas where there are already large numbers of radiologic technologists.

Areas of Employment

- hospitals
- clinics
- health care centers
- physicians' offices
- public health facilities

For Additional Information

American Registry of Radiologic Technologists
2600 Wayzata Boulevard
Minneapolis, Minnesota 55405

079.361-010 Respiratory Therapist (Inhalation Therapist)

Respiratory Therapy Technician

Respiratory Therapist

Among the members of the health care team, respiratory therapists may be the ones most frequently called upon to administer emergency life saving treatment. Their role is critical because patients who stop breathing longer than three to five minutes can suffer from severe brain damage, even when breathing is restored. Lack of oxygen for more than nine minutes results in death.

Respiratory therapists set up and operate equipment that provide oxygen and other gases necessary for breathing as prescribed by the doctor. Such equipment includes respirators, iron lungs, oxygen tents, mechanical ventilators, as well as monitoring devices. Patients may be anyone who has difficulty breathing--a newborn who needs short-term assistance or a stroke victim who needs breathing apparatus over an extended period. Therapists also provide training lessons for patients to help them overcome their lung disabilities such as asthma and pneumonia. Some patients may require the use of special equipment at home and must learn how to use and care for that equipment.

Some respiratory therapists work primarily in pulmonary laboratories where they perform tests to provide doctors with the information to make the diagnosis. Some tests measure lung volume. Other tests isolate the type and source of the disease or determine the progress of treatment.

Respiratory Therapy Technician

Respiratory therapy technicians are graduates from one-year training programs. They perform essentially the same duties as respiratory therapists. However, because therapists have a higher level of training, they may be involved more with teaching and supervisory activities. The technicians, on the other hand, deal more with direct patient activities.

Following graduation and one year of clinical experience, technicians may take the certification examination to become a certified respiratory therapy technician.

Personal Qualifications and Training

Mechanical abilities, manual dexterity and ability to work calmly under emergency situations are important skills for this occupation. Also, an interest in working with people, patience, and attention to details are other useful qualities. To prepare for this occupation, high school courses should include health, biology, mathematics, physics, and bookkeeping. Formal programs two to four years in length are offered by colleges, community colleges, technical schools and hospitals. Graduates from four-year programs receive a bachelor's degree while associate degrees or certificates are granted in the two-year programs. Following graduation and a year of clinical experience, respiratory therapists are eligible to take the registration examination of the American Association for Respiratory Therapy.

Outlook

Job opportunities in this field are good. There are more jobs than there are trained personnel. Places such as clinics, nursing homes and home care programs have recognized the value of having a therapist or technician on the staff. Also, with improved diagnostic techniques, more patients are identified who need the specialized services of respiratory therapy workers.

Areas of Employment

- hospitals (respiratory therapy, anesthesiology or pulmonary medicine departments)
- oxygen equipment rental companies
- ambulance services
- nursing homes
- clinics
- colleges

For Additional Information

American Association for Respiratory Therapy
1720 Regal Row
Dallas, Texas 75235

Schools in New Jersey

Respiratory Therapist

Atlantic Community College
Mays Landing, New Jersey 08330

Bergen Community College
Paramus, New Jersey 07652

Brookdale Community College
Lincroft, New Jersey 07738

Fairleigh Dickinson University
Madison, New Jersey 07940

Union County Technical Institute
Scotch Plains, New Jersey 07076

Respiratory Therapy Technician

Atlantic Community College
Mays Landing, New Jersey 08330

Burlington County Memorial Hospital
Mount Holly, New Jersey 08060

Gloucester County College
Sewell, New Jersey 08080

Passaic County Community College
Paterson, New Jersey 07506

St. Barnabas Medical Center
Livingston, New Jersey 07039

UMDNJ - School of Allied Health Professions
Newark, New Jersey 07103

10. Medical Services

Chiropractor

Osteopathic Physician

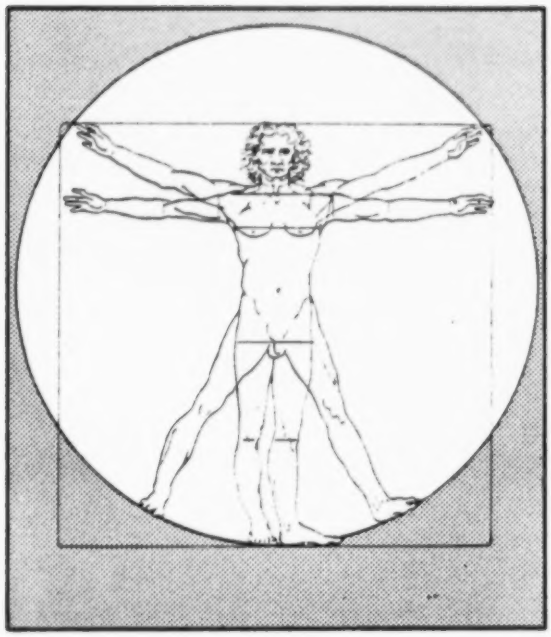
Physicians

Podiatrist

10. Medical Services

Chiropractor

079.101-010



The practice of chiropractic is based upon the principle that good health and resistance to disease is related to effective functioning of the nervous system. By identifying where nerve activity is impaired, chiropractors apply corrective procedures to restore or maintain the proper function of the nervous system. Pressure and stress on nerves frequently result when vertebrae deviate from their normal position. A major part of a chiropractor's work, therefore, involves making adjustments or realigning the spinal column through manipulation by hand.

Chiropractors use X-rays and other chiropractic measuring devices in analyzing the spinal condition. Besides manipulation, treatment may then include therapy using heat, water, light, electricity or ultrasound. They do not prescribe drugs or perform surgery.

Although the profession is relatively small, there is a growing public awareness and recognition of chiropractic services. This acceptance is perhaps related to people's interest in total body health and the interrelationship among the body's systems. Chiropractic may thus be viewed as both preventive and therapeutic health care.

Personal Qualifications and Training

Chiropractors depend on their keen sense of observation to detect physical abnormalities. In performing adjustments, hand dexterity is essential. Therefore, good hand and eye coordination is an important trait for this profession. Also desirable are an understanding of people and a pleasing personality. A good science background is a pre-requisite for entering chiropractic college. To be eligible for entrance into the four-year chiropractic program, students must have completed two years of college and fulfilled the basic course requirements. The doctor of chiropractic degree is awarded upon completion of the program. To practice in New Jersey one must be licensed.

Outlook

Chiropractic is a growing profession. Although the colleges are graduating more students, there is no apparent over-supply of chiropractors. In some areas, chiropractic is better established and has achieved greater public recognition. Now that chiropractic services are covered by health insurance and health care plans, it is expected that the public will make greater use of those services.

Most chiropractors are in their own private practice. Some work in a chiropractic group or clinic. There is an increasing interest in chiropractic research and a number of chiropractors are engaged in those activities. Others teach at chiropractic colleges.

Areas of Employment

- private practice
- chiropractic clinics
- chiropractic colleges

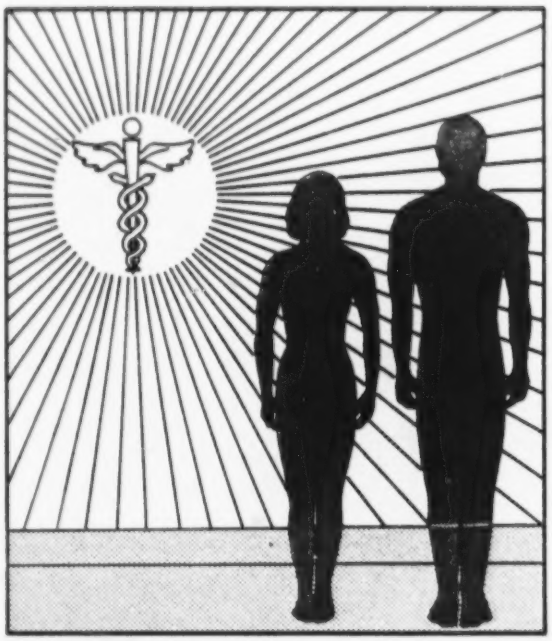
For Additional Information

The Council of Chiropractic Education
3209 Ingersoll Avenue
Des Moines, Iowa 50312

Schools in the Nearby Area

New York Chiropractic College
Glen Head, New York 11545

10. Medical Services



Osteopathic Physician

071.101-010

Osteopathic physicians diagnose and treat illnesses, diseases, and injuries. However, doctors of osteopathy (D.O.s) approach the practice of medicine from a somewhat different perspective than doctors of medicine (M.D.s). In addition to treating the immediate symptoms of illness and disease, they also focus on restoring to balance the functioning of all body systems. That is, they view disease or illness as an outward symptom of disturbance of a body system which, in turn, affects the normal functioning of all other body systems. They give particular attention to the musculoskeletal system (muscles, tendons, and bones) because it accounts for over 60% of the body's total structure. To correct abnormal stresses on the musculoskeletal system, D.O.s employ manipulative procedures, such as aligning the spinal vertebrae.

The concern of D.O.s is on the interrelationship of all body systems rather than just on the disorder at a specific site. They take into account the person as a whole. Therefore, most are in general or family practice. They are trained and qualified to practice all branches of medicine and surgery. Similar to M.D.s, D.O.s also specialize in areas such as pediatrics, obstetrics/gynecology, radiology, surgery, psychiatry, and sports medicine. They differ from M.D.s in some of the techniques they employ in diagnosis and treatment, practicing what they view as a "holistic" approach to medical care.

Personal Qualifications and Training

A concern and desire for helping others, good intellectual abilities, emotional stability, integrity, working well with one's hands, patience, and a good personality are all important characteristics for a successful career in osteopathic medicine. Because the training and subsequent practice are rigorous and demanding, a person should be in better than average physical health.

Osteopathic physicians are trained in colleges of osteopathic medicine after graduation from college or attending college for three years. The basic courses of the programs are similar to those of medical schools but with greater emphasis on the structure and function of the musculoskeletal

system. In addition, community, family, and preventive medicine are emphasized.

After completing the four-year program, doctors of osteopathy then serve for a year as an intern at an approved osteopathic hospital. Some may continue in residency training in one of the medical specialties. A license to practice is then granted when the doctor passes the licensing board examination.

Outlook

The demand for osteopathic physicians continues to grow. About 10% of the population seek the services of a D.O. Opportunities are more favorable in locales where osteopathic medicine is popular. Over half the practicing D.O.s practice in small towns or rural areas. New Jersey is among the states with a large number of osteopathic physicians.

Areas of Employment

- private practice
- group practice
- hospitals
- osteopathic colleges
- government agencies

Schools in New Jersey

College of Medicine and Dentistry
of New Jersey
New Jersey School of Osteopathic
Medicine
300 Broadway
Camden, New Jersey 08103

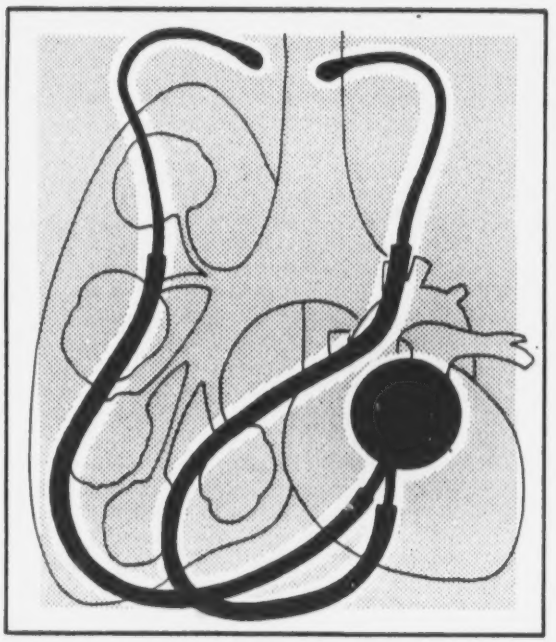
For More Information

American Association of Colleges
of Osteopathic Medicine
4720 Montgomery Lane, Suite 609
Washington, D.C. 20014

American Osteopathic Association
212 E. Ohio Street
Chicago, Illinois 60611

10. Medical Services

Physicians
070.061-010
through
070.107-014



Medical doctors since early recorded history have held an important role in society, serving the sick and injured. While our recovery from illness, disease, and wounds depends on the services of many health care professionals, scientists, nurses, technicans, etc., it is the doctor who makes the diagnosis and directs the course of treatment. Our stereotypic image of doctors as omnipotent is not unwarranted and is indeed a tribute to their humanitarian services. However, like the work of most professionals, the work is not magical, nor are physicians superhumans. Persons who enter this profession are those interested in the science of medicine, are dedicated to serving others, and are willing to devote their efforts and time in the training. There is no one single "type" of person who enters medicine but a diverse range of people with different interests and different assets.

The practice of medicine has changed dramatically in this century. With rapid advances in knowledge and technology, it is no longer possible to "know" everything about medicine. Where once most physicians practiced general medicine, the number of general practitioners has declined to less than 15%. Physicians today are specialists in one of the over 40 different specialties. In complex cases of disease or injury, a team of physicians works together, each contributing in his/her area of expertise. The different specialities depend on different sets of skills and range from those that require good manual dexterity such as the surgical specialties, to those requiring good interpersonal skills such as psychiatry and pediatrics, to those that require keen perceptual skills such as pathology. Although most physicians work directly with patients, some physicians do not even see patients but are involved in research, administration, or writing and editing medical education materials.

The following lists are some of the areas of specialization. Among the larger specialties include internal medicine, general surgery, obstetrics and gynecology, psychiatry, and pediatrics.

General Practice

Medical Specialties

Allergy
Cardiovascular diseases
Dermatology
Family Practice
Gastroenterology
Internal medicine
Pediatrics
Pulmonary diseases

Surgical Specialties

Anesthesiology
Colon and rectal surgery
General surgery
Neurological surgery
Obstetrics and gynecology
Ophthalmology
Orthopedic surgery
Otolaryngology
Plastic surgery
Thoracic surgery
Urology

Psychiatry and Neurology

Child psychiatry
Neurology
Psychiatry

Other Specialties

Aerospace medicine
General preventive medicine
Occupational medicine
Pathology
Physical medicine and rehabilitation
Public Health
Radiology

Personal Qualifications and Training

A well-rounded personality, emotional stability, and good judgment are important qualities for a physician.

Since medicine is the practical application of scientific knowledge, one should have a strong interest and aptitude in the sciences and proficiency in mathematics. Also, competition for the number of available places in medical school is great, so academic achievement serves as one critical measure of one's qualifications. However, the ability to attain high marks does not insure a good physician, and medical schools look for candidates who show dedication to serving others, leadership qualities, resourcefulness, and motivation.

Among the health care professionals, the length of training for physicians is perhaps the longest, at least 8 years after high school, and residency training if one specializes. One may apply to medical school after three years of college. Most medical students, however, have their bachelor's degree. There is no required college major but applicants must complete the premedical course requirements. Most medical school programs are four years, but a small number of schools offer a concentrated three-year program. A few schools with six-year programs accept students directly from high school.. Medical school graduates then train for an additional one to three years as interns and residents in hospitals. Some specialties may require longer residency training.

Outlook

The shortage of physicians has gradually diminished in recent years, as medical schools are graduating more students and foreign trained physicians establish practice in the U.S. Also, greater use of technicians and assistants, more effective methods of treatment, group practice and health maintenance organizations, and advances in technology have allowed physicians to attend to more patients. However, the need for physicians remains strong, especially in less sparsely populated areas where the demand is particularly acute. Most physicians tend to practice around large metropolitan areas, especially specialists who need the facilities of large hospitals and medical centers. The need for physician services will continue to rise with population growth and increase in the number of elderly who require more medical care. With prepaid medical plans, health insurance, and federal health care programs, people are less reluctant to seek medical attention because of their inability to pay.

Areas of Employment

- private practice
- group practices and health maintenance organizations
- hospitals
- research institutions
- government agencies
- public health agencies
- schools
- industry
- Armed Forces

Schools in New Jersey

University of Medicine and Dentistry of New Jersey
New Jersey Medical School
Newark, New Jersey 07103

University of Medicine and Dentistry of New Jersey
Rutgers Medical School
New Brunswick, New Jersey 07103

For Additional Information

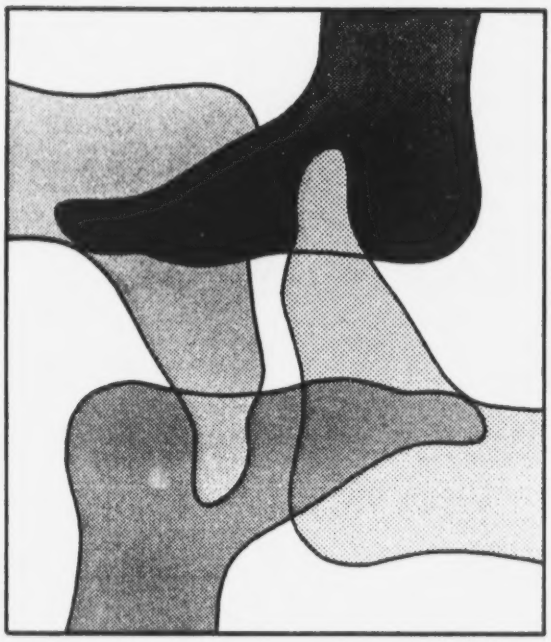
American Medical Association
535 N. Dearborn Street
Chicago, Illinois 60610

Association of American Medical Colleges
One Depont Circle, NW, Suite 200
Washington, D.C. 20036

10. Medical Services

Podiatrist

079.101-022



Foot problems are the specialty of podiatrists, doctors of podiatric medicine. They are trained to diagnose and treat disease, injuries, and deformities of the foot. Foot ailments, like ailments in other parts of the body, are treated with medication or surgery, but in addition may also require shoe and special appliance therapy or physical therapy. Podiatrists usually handle most surgery such as removal of bunions, cysts, nails and warts right in the office. More complicated surgery that might require general anesthesia would take place in the hospital.

The range of foot disorders that podiatrists encounter span from skin infections such as "athlete's foot" to gross abnormalities such as a "club-foot" that requires major surgery as well as corrective footwear. A large part of a podiatrist's practice involves physical therapy to strengthen muscles and improve flexibility of joints to restore the function of the foot. Whirlpool baths, paraffin baths, infrared lamps, ultrasound waves and electric currents are among the items used in therapy. Other aspects of the practice include the prescribing and fitting of corrective devices and appliances. These actitivies may involve making plaster casts from which foot appliances or moulded shoes are then made in a laboratory.

Podiatrists have patients of all ages and from all walks of life. According to a 1980 government survey, foot disorders are the major cause of disability in 20 out of every 1,000 Americans. For every person suffering from a foot disabililty, it is estimated that 30 more may be suffering from some type of foot problem. Foot ailments are widespread and perhaps go undetected in many cases. People may complain about their "aching feet" but often do not realize that something can be done about the problem.

However, there is a growing awareness of good foot care as people participate in more physical fitness activities such as jogging, long distance running, dancing and hiking. Podiatrists are playing a vital role in the preventive aspect of foot care such as in design of sport shoes, foot exercises, and proper use of the feet.

Proper Qualifications and Training

Interest and competence in science, good manual dexterity and enjoyment of detailed work are requirements for a successful career in podiatry. A good personality and ability to communicate with all types of people are also important assets. Students may enter a college of podiatry after two years of college work, but most have attained their baccalaureate degree. The podiatry program is four years in length. Doctors of podiatry must complete one year of internship before they are eligible to be licensed in New Jersey. Additional residency is necessary for podiatrists who wish to specialize in areas such as foot surgery, orthopedics, podopediatrics (children's foot ailments) or podogeriatrics (foot ailments of the elderly). A relatively new specialty is podiatric sports medicine where the podiatrist is trained to deal with leg and foot problems of athletes.

Outlook

A population more active in sports, a larger elderly population, and incresing population in general, has created high demands for podiatrists. The majority of podiatrists practice in and around large metropolitan areas, so smaller suburban and rural areas are less well serviced. Nursing homes are recognizing the value of podiatrists serving their facilities. With good foot care and treatment, the elderly who might be otherwise bedridden are able to move about (a major cost-saving measure, because it costs much more to care for the bedridden). Industry has also found that foot problems of employees reduce productivity and engage podistrists to screen and treat employees for foot ailments.

Areas of Employment

- private practice
- hospitals
- clinics
- teaching at podiatric colleges

For Additional Information

American Podiatry Association
20 Chevy Chase Circle, NW
Washington, D.C. 20015

Schools in the Nearby Area

There are only six podiatric colleges in the U.S. Closest to New Jersey are:

New York College of Podiatric Medicine
New York, New York 10035

Pennsylvania College of Podiatric Medicine
Philadelphia, Pennsylvania 19107

11. Nursing and Physician Extender Services

Homemaker - Home Health Aide
(Home Attendant)
(Home Health Aide)

Licensed Practical Nurse

Registered Nurses

Community Health Nurse
(Public Health Nurse)

General Duty Nurse
(Hospital Nurse)

Gerontological Nurse Practitioner
Nurse Anesthetist
Nurse Educator
Nurse - Midwife
Occupational Health Nurse
Office Nurse
Private Duty Nurse
School Nurse

Nurse's Aide
Orderly

Operating Room Technician
(Surgical Technician)

Psychiatric Aide

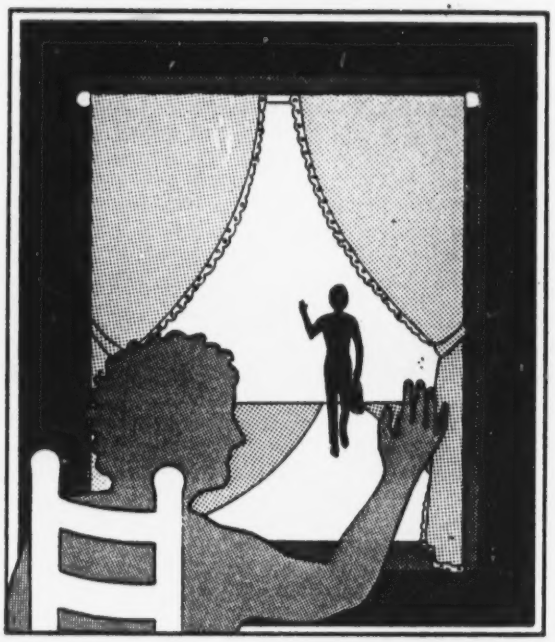
Physician's Assistant

11. Nursing and Physician Extender Services

Homemaker - Home Health Aide

354.377-014

(Home Attendant)
(Home Health Aide)



Until modern hospitals that we know of today came into being, the sick and disabled were cared for in their own homes. As hospitals became more accessible and provided specialized services, they became the centers for treatment and care. However, this has changed with the rise in hospital costs and a larger population of elderly and others needing long-term care. There is a growing trend to care for patients who are not dependent on the more sophisticated hospital services at home. Also, it has been found that being in one's own home environment often improves the patient's attitude and speeds recovery.

Home care programs have grown dramatically and are run by various health agencies, such as visiting nurse associations, public health agencies, and hospitals. These programs serve patients ranging from those who need a variety of visiting therapists and specialized nurses to those who need basic convalescent care. Home health aides provide basic patient care services under the supervision of a nurse, social worker, or therapist, as well as the physician. They help patients perform daily routine activities such as bathing, dressing, exercising, eating, and taking medication. Some household services, such as meal planning and cleaning, are often included.

The work of home health aides vary greatly, depending on the patient's condition. Some may require much bedside attention while others may simply need help or instruction in certain activities. Some require daily care while others are visited on a weekly basis.

Personal Qualifications and Training

Good judgment, emotional maturity, and desire to help others are important qualities for this work. Tact, patience, and a cheerful disposition are especially useful in helping the sick in their recovery process. There are no specific requirements for employment. However, knowledge of first aid and household management are useful. Nearly all training is conducted on the job. A few community colleges and vocational-technical schools are beginning to offer courses in personal care services.

Because of greater emphasis in home care, service agencies are beginning to establish standards for this work and develop more extensive training materials.

Outlook

The number of workers in this area has grown dramatically. The increase can be attributed to the high cost of hospitalization, more elderly who need long-term care, and payment of home care services by health insurance and social service funds. Since home care programs greatly benefit both patient and the community, the need for home health aides far exceeds the number of workers in the field.

For Additional Information

National Home Caring Council
67 Irving Place
New York, New York 10003

11. Nursing and Physician Extender Services

Licensed Practical Nurse

075.374-014

The persons who attend to a great part of a patient's nursing needs are the licensed practical nurses (LPNs). Working under the supervision of registered nurses and doctors, they take and record temperature readings, change dressings, administer medication, bathe and dress patients, and monitor patients' progress. The work, of course, varies with the hospital ward, the type of hospital, or other patient care facilities. In the hospital nursery, for example, LPNs may be responsible for the changing, feeding, and caring of newborns. In an intensive care unit, they may need to operate and monitor specialized equipment to care for the seriously injured or ill. Working in a private home, they attend to the all-around daily needs of the patient. Working in a doctor's office, they may assist the doctor during an examination and perform simple laboratory tests.

Since LPNs provide much of the bedside patient care, patients perhaps see more of the LPN than any of the other members of the health care team. As such, they work closely with the patients as well as their families.

LPNs are the second largest group of health care providers.

Personal Qualifications and Training

The desire to help others, working well with people, patience and emotional stability are all important qualities for an LPN. Good health and physical stamina are especially desirable since one comes in contact with patients with infectious diseases, as well as patients who cannot move without assistance. High school courses in biology, chemistry, health and psychology are useful. To become an LPN one must complete a one-year approved training program offered at hospitals, vocational-technical schools, high schools or community colleges and pass the state licensing examination.

Outlook

The number of LPNs has more than doubled in the past 20 years and indicates their increased role in providing health care services. In addition to hospitals, there has been a growing need for LPNs in nursing homes and extended care facilites. Also, with the rising costs of hospital care, there is a trend to provide medical care at home whenever feasible for long-term illness--another factor in the rising need for LPNs.

Areas of Employment

- hospitals
- mental health facilities
- nursing homes
- extended care facilities
- doctors' offices
- child care centers
- clinics
- public health agencies
- private homes

Schools in New Jersey

Diploma Programs Only

Public Two-Year Colleges

Hudson County Community College
Commission
North Bergen, New Jersey 07047

*Salem Community College
Penns Grove, New Jersey 08069

Union County Technical Institute
Scotch Plains, New Jersey 07076

Vocational/Technical and
High Schools

Atlantic County Area Vocational/
Technical School
Atlantic City, New Jersey 08401

Bayonne High School
Bayonne, New Jersey 07002

Bergen County Area Vocational/
Technical School
Hackensack, New Jersey 07601

Burlington County Area
Vocational/Technical School
Mt. Holly, New Jersey 08060

Camden County Area Vocational/
Technical School
Sicklerville, New Jersey 08081

Camden High School
Camden, New Jersey 08103

*certificate program

Cape May County Area Vocational/
Technical School
Cape May Crt. House, New Jersey
08210

Cumberland County Area Vocational/
Technical School
Bridgeton, New Jersey 08302

Essex County Area Vocational/
Technical School
Newark, New Jersey 07017

Gloucester County Area Vocational/
Technical School
Sewell, New Jersey 08080

Hunterdon County Adult School
Flemington, New Jersey 08822

Jersey City Public Schools
Jersey City, New Jersey 07304

Mercer County Area Vocational/
Technical School
Trenton, New Jersey 08690

Middlesex County Area Vocational/
Technical School
East Brunswick, New Jersey 08816

Monmouth County Area Vocational/
Technical School
Marlboro, New Jersey

Morris County Area Vocational/
Technical School
Denville, New Jersey 07834

Ocean County Area Vocational/
Technical School
Toms River, New Jersey 08753

Passaic County Area Vocational/
Technical School
Wayne, New Jersey 07470

Perth Amboy Adult School
Perth Amboy, New Jersey 07561

Somerset County Area Vocational/
Technical School
Somerville, New Jersey

Sussex County Area Vocational/
Technical School
Newton, New Jersey 07860

Union County Area Vocational/
Technical School
Union, New Jersey 07083

Vineland High School
Vineland, New Jersey 08360

Warren County Area Vocational/
Technical School
Washington, New Jersey 07882

Hospitals

Bergen Pines County Hospital
Paramus, New Jersey 07652

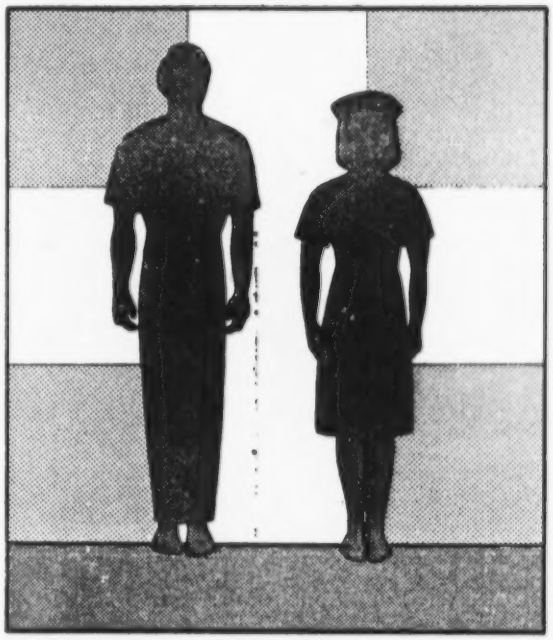
*Holy Name Hospital
Teaneck, New Jersey 07666

Medical Center at Princeton
Princeton, New Jersey 08540

*certificate program

11. Nursing and Physician Extender Services

075.___ ___ Registered Nurses
075.124-014 Community Health Nurse
(Public Health Nurse)
075.374-010 General Duty Nurse
(Hospital Nurse)
Gerontological Nurse Practitioner
075.371-010 Nurse Anesthetist
075.121-010 Nurse Educator
075.264-014 Nurse - Midwife
075.374-022 Occupational Health Nurse
075.374-014 Office Nurse
075.374-018 Private Duty Nurse
075.124-010 School Nurse



Registered nurses make up the largest single group of professional health care workers. The above list of titles gives only a small indication of the various areas where nurses work and their important roles in health care. The different work settings determine the duties, responsibilities and special skills required of registered nurses. The particular nursing career one seeks depends largely on one's interests and type of training program one enters. Most of us have a general notion of nurses' roles in caring for and assisting in the treatment and recovery of the ill and injured. The descriptions that follow may provide a glimpse of the diverse opportunities in nursing and how nurses function as members of the health care team. Keep in mind, however, that as the degree of specialization and responsibilities increase, the amount of required training is also increased. In some positions, a graduate degree, in addition to a bachelor's degree, is prerequisite.

Hospital nurses are, of course, the largest group of nurses. They provide patient care in the various hospital units such as surgery, pediatrics, obstetrics, emergency room, psychiatry, and so on. They usually attend to patient care duties requiring specialized clinical knowledge and supervise the other nursing staff, practical nurses, nurses' aides, and orderlies in the more routine and less complex aspects of nursing. Hospital nurses carry out the treatment plan prescribed by the physicians--preparing equipment; administering medication; making measurements such as temperature, pulse, blood pressure, etc.; monitoring the patient's progress; and providing for the patient's general comfort.

Within a hospital are several levels of nursing positions. Registered nurses usually start as general duty nurses and advance to head nurse or supervisor of a unit. The director of nursing services administers the nursing program of the hospital, managing and directing nursing personnel and developing and implementing policies.

Office nurses work for physicians in private or group practice. They prepare patients for examination or treatment. Assisting the physician in a variety of tasks, they administer medication and injections, clean and dress wounds, prepare and sterilize equipment, and instruct patients. Their work in an office may also involve administrative and record keeping activities.

Private duty nurses care for an individual patient in the hospital or his/her home. They attend to the various needs of the patient as directed by the physician. Patients, requiring a private duty nurse, usually need constant observation as well as special types of treatment.

Community health nurses work in community settings such as homes, clinics, schools, and health agencies. They participate to a greater extent in preventive medicine, instructing on good health care, organizing immunization and disease screening programs, and implementing community health activities. They serve as the community's health educator and help to develop programs to improve the community's health services. Often they assist or guide families in obtaining appropriate medical care.

School nurse practitioners are familiar to every school child. They provide the emergency first aid services in the schools, as well as examine students for conditions that may require medical attention. Other activities include preparing and conducting lessons on health care; maintaining medical records; developing programs to meet health needs of the school community; conferring with parents and physicians on students' emotional problems that interfere with learning; and immunizing students. School nurses in New Jersey are required to have a bachelor's degree and additional training in student health education.

Nurse educators are teachers of nursing students as well as nurses who seek further training or training in specialized skills. They give instruction in the classroom and in clinical settings. Nurse educators must keep up with new developments in the field in order to develop and design educational programs as the need arises.

Occupational health nurses are employed by businesses or manufacturing concerns, providing nursing services to employees of the company. They treat minor illnesses or administer first aid for injuries that occur in the workplace. Nurses in industry instruct employees on health maintenance and provide counseling on health matters. Companies are becoming increasingly aware of the importance of illness prevention as well as safety in the workplace. As a result, nurses have become involved in developing procedures to reduce accidents as well as physical fitness programs.

Nurse - midwife is a nurse who specializes in the care of expectant mothers, delivery of babies, and post-delivery care. Nurse-midwives work under the supervision of an obstetrician. They also instruct patients in family planning, pre-natal care as well as infant care and family living.

Nurse anesthetists are trained in the techniques of administering anesthetics for surgery, delivery, or other situations requiring pain relief. Anesthetics are given as fluids intravenously, spinally, or in muscle tissue; or as gases delivered through complex equipment. When patients are under anesthesia their breathing, pulse and other vital signs must be carefully watched and recorded. The nurse anesthetist is thus at the same time skilled in nursing and the science of anesthesiology. Additional training is required for work in this area.

Gerontological nurse practitioners is a rapidly growing group of nurses who have additional specialized training in the health care of the aged. They are knowledgeable about the processes of aging and the various medical needs of the elderly. Much of their work involves evaluating the health conditions of patients and planning for the care required. Some work in nursing homes while others work in outpatient facilities.

Personal Qualifications and Training

As we are well aware, nurses should possess a strong desire to serve others and an understanding of the needs of others. In addition, one should be able to make wise judgments, perform tasks calmly under stressful situations, follow directions precisely, and be emotionally mature. Good health and physical stamina are also important assets. High school courses should include the sciences and social sciences.

There are basically three types of programs that prepare one for professional nursing. Four- or five-year programs that lead to a bachelor's degree in nursing are offered by colleges and universities. This degree is a prerequisite for many managerial and supervisory positions, as well as work in health agencies and the public schools. Nurses who graduate from these programs may enter graduate (master's or doctorate) degree programs in specialized areas, teaching, or research.

Diploma programs have long been the traditional route to a nursing career. They are offered by hospitals (often in affiliation with colleges and universities) and are two to three years in length.

Associate degree programs are offered by community colleges and are two years in length. These programs include courses in general education as well as nursing theory and practice.

Selecting from among the three types of programs depends upon one's career goals. Nurses with diplomas or associate degrees work primarily as staff nurses, providing the nursing care we typically associate with nurses. A greater diversity of work settings and advancement opportunities are available to nurses with bachelor's and graduate degrees. Upon completion of one of the three programs, graduates must take a state licensure examination to become a registered nurse.

Outlook

The role of registered nurses has undergone appreciable change in the past decades as nurses have become better educated. They have assumed greater responsibility and make more independent decisions concerning patient care, as well as administrative policies. No longer do they only implement orders but participate as a member of the health care team in planning and decision making. Moreover, nurses have expanded into diverse areas that call for higher levels of technical expertise. As medicine advances, new areas of nursing specialties have emerged, offering nurses a greater number of career options.

There has been and continues to be a large demand for staff nurses or primary/bedside patient care nurses. With population growth and the public's increasing use of health care services, the need for nurses will remain high. Opportunities for nurses in the clinical specialties, managerial and administrative positions, and teaching are also very good for nurses with post-graduate training.

Areas of Employment

- hospitals
- clinics
- community health centers
- nursing homes
- extended care facilities
- physician's offices
- schools
- college and universities
- industrial plants
- infirmaries
- patients' homes
- public health departments
- social service agencies

Schools in New Jersey

Bachelor of Science Degree Program

*Bloomfield College
Bloomfield, New Jersey 07003

College of St. Elizabeth
Convent Station, New Jersey 07961

*Fairleigh Dickenson University
Rutherford, New Jersey 07070

*Felician College
Lodi, New Jersey 07644

*Rutgers - The State University of New Jersey
College of Arts and Sciences
Camden, New Jersey 08102

*Rutgers - The State University of New Jersey
College of Nursing
Newark, New Jersey 07102

*Seton Hall University
South Orange, New Jersey 07079

Stockton State College
Pomona, New Jersey 08240

*Trenton State College
Trenton, New Jersey 08625

*William Paterson College
Wayne, New Jersey 07470

Associate Degree Program

*Atlantic Community College
Mays Landing, New Jersey 08330

*Bergen County Community College
Paramus, New Jersey 07652

*Brookdale Community College
Lincroft, New Jersey 07738

* signifies accreditation by National League for Nursing

*Camden County College
Blackwood, New Jersey 08012

*County College of Morris
Dover, New Jersey 07801

*Cumberland County College
Vineland, New Jersey 08360

*Essex County College
Newark, New Jersey 07112

*Felician College
Lodi, New Jersey 07644

*Gloucester County College
Sewell, New Jersey 08080

*Mercer County Community College
Trenton, New Jersey 08690

*Middlesex County College
Edison, New Jersey 08817

*Ocean County College
Toms River, New Jersey 08753

*Passaic County Community College
Paterson, New Jersey 07505

*Somerset County College
Somerville, New Jersey 08876

*Union College
Cranford, New Jersey 07016

Diploma Program

*Ann May School of Nursing
Jersey Shore Medical Center
1945 Corlies Avenue
Neptune, New Jersey 07753

Bayonne Hospital School of Nursing
East 130th Street
Bayonne, New Jersey 07002

*Charles E. Gregory School of Nursing
Raritan Bay Health Services Corp.
Perth Amboy General Hospital
Old Bridge Region
530 New Brunswick Avenue
Perth Amboy, New Jersey 08861

*Christ Hospital School of Nursing
176 Palisade Avenue
Jersey City, New Jersey 07306

*Clara Maass Memorial Hospital School of Nursing
1A Franklin Avenue
Belleville, New Jersey 07109

Cooper Medical Center School of Nursing
300 Broadway
Camden, New Jersey 08103

*East Orange General Hospital
East Orange, New Jersey

*Elizabeth General Hospital School of Nursing
925 E. Jersey Street
Elizabeth, New Jersey 07201

*Englewood Hospital School of Nursing
350 Engle Street
Englewood, New Jersey 07631

*Helene Fuld School of Nursing at West Jersey Hospital
Mt. Ephraim Avenue
Camden, New Jersey 08104

*Helene Fuld Medical Center School of Nursing
750 Brunswick Avenue
Trenton, New Jersey 08638

*Holy Name Hospital School of Nursing
690 Teaneck Road
Teaneck, New Jersey 07666

* signifies accreditation by National League for Nursing

*Mercer Medical Center
School of Nursing
Box 1658
Trenton, New Jersey 08607

*Mountainside Hospital School of Nursing
Bay & Highland Avenue
Montclair, New Jersey 07042

*Muhlenberg Hospital School of Nursing
Park Avenue & Randolph Road
Plainfield, New Jersey 07061

*Orange Memorial Hospital
The Hospital Center at Orange
School of Nursing
188 South Essex Avenue
Orange, New Jersey 07051

*Our Lady of Lourdes School of Nursing
1565 Vesper Blvd.
Camden, New Jersey 08103

*St. Francis Community Health Center
School of Nursing
One McWilliams Street
Jersey City, New Jersey 07030

*St. Francis Hospital School of of Nursing
601 Hamilton Avenue
Trenton, New Jersey 08629

St. Mary's Hospital
Hoboken, New Jersey 07030

*St. Peter's General Hospital
School of Nursing
254 Easton Avenue
New Brunswick, New Jersey 08903

For Additional Information

National League for Nursing
10 Columbus Circle
New York, New York 10019

American Nurses Association
2420 Pershing Road
Kansas City, Missouri 64108

* signifies accreditation by National League for Nursing

11. Nursing and Physician Extender Services

Nurse's Aide
355.674-014
Orderly
355.674-018

This group of workers constitutes the largest group of health care workers. They provide services that do not require technical training but which are basic and vital to patient care. Their duties vary depending on the type of health care facility and patient needs. Nursing aides and orderlies may perform similar tasks, but orderlies and attendants are usually men who handle heavier duties such as lifting and transporting patients. Working under the direction of the nursing and medical staff, they serve and assist patients with meals, clean rooms and change linens, bathe and dress patients, prepare equipment such as sterilizing instruments, and transport patients to treatment areas.

There are no specific educational requirements. Most skills and tasks are learned on the job, and some facilities provide classroom instruction and demonstration. Aides and orderlies with additional formal education may advance to nurse and technician positions.

Personal Qualifications and Training

The desire to care for those in need, dependability, and willingness to perform less glamorous tasks, are important for work in this area. Employees prefer high school graduates, but a high school diploma is not always requried. However, people who are mature and emotionally stable are especially needed in caring for the seriously ill and disabled patients.

Outlook

With the increased need for health care and rising medical costs, job opportunities are very good. Personnel who can assist professionals in the more routine duties can significantly help to reduce the cost of health care. A large number of aides and orderlies work in hospitals, but there will be many more job openings in nursing homes, convalescent homes, and extended care facilities.

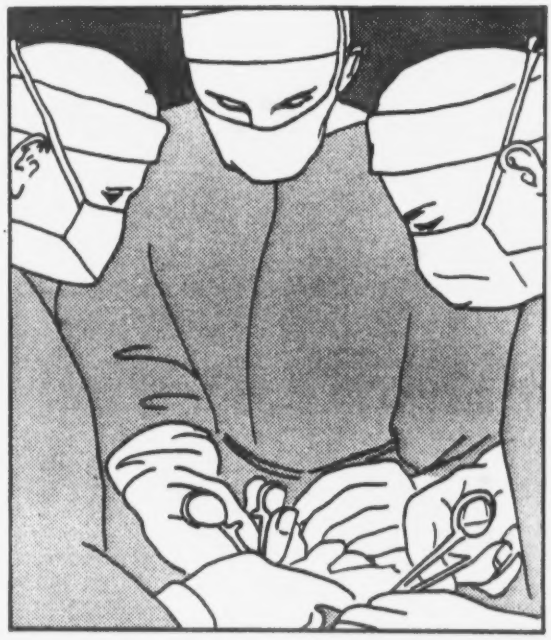
Areas of Employment

- hospitals
- nursing homes
- convalescent homes
- mental health facilities
- extended care facilities

11. Nursing and Physician Extender Services

Operating Room Technician
(Surgical Technician)

079.374-022



Operating room technicians are part of the operating team that includes surgeons, nurses, and anesthesiologists. Working under the supervision of registered nurses, they assist in operations--passing instruments and supplies, holding retractors, and keeping track of the materials used. Prior to the operation they prepare the instruments, equipment, linens, and fluids needed during surgery. They may also prepare the patient for surgery. Following the operation, they straighten out the room and prepare it for the next use. Operating room technicians are, in essence, all-around assistants to doctors and nurses in the operating area.

The work environment during an operation is demanding and often very tense. The technician must be able to respond to the minute-to-minute changes that take place and anticipate the needs of the doctors and nurses. Because of the critical nature of surgery, one must be alert to details and work with great care and in an orderly fashion.

Personal Qualifications and Training

An operating room technician should have good manual dexterity and be emotionally stable. Science, mathematics and health courses in high school are good preparation for subsequent training. Formal training may be obtained at a variety of institutions, and programs range from one to two years. Two-year college programs offer their graduates an associate degree. Training programs are given at technical and vocational schools, community colleges, hospitals, and medical schools. Certification is awarded by the Association of Surgical Technologists when one passes its examination.

Outlook

Jobs in this area are expected to expand with growth in the health care field in general. Also, there is an increasing trend to have operating room technicians attend to many of the routine duties previously performed by nurses. Experienced technicians may advance to administrative and supervisory positions in the operating room. In administrative positions they would be in charge of running the operating room, ordering supplies,

and arranging work schedules. In supervisory positions they would supervise other technicians and aides.

Areas of Employment

. hospitals

Schools in New Jersey

Bergen Community College
Paramus, New Jersey 07652

Institute for the Advancement of Medical Science
Cherry Hill Medical Center
Cherry Hill, New Jersey 08034

UMDNJ - School of Allied Health Professionals
Newark, New Jersey 07652

11. Nursing and Physician Extender Services

Psychiatric Aide

355.377-014

Psychiatric aides are nursing workers who work in facilities for the mentally handicapped--mental hospitals, state institutions, and training schools. Working under the supervision of nurses, they provide much of the basic personal care services needed by the patients, such as dressing, grooming, bathing, and perhaps eating. The needs of patients vary greatly, and psychiatric aides attend to a vast range of non-medical activities that include assisting in the cleaning of rooms and wards, accompanying patients on outings, and teaching basic skills necessary for everyday living. Another important dimension is interacting with patients to help them develop social skills and participate in recreational activities. Socializing with others is an essential factor in the recovery process. Since psychiatric aides work very closely with the patients, their observation of patient changes and needs provide useful information to the professional mental health care team in planning therapy or treatment.

Personal Qualifications and Training

Persons who work in this area should possess a strong desire to assist the handicapped. Qualities such as understanding of others, patience, and emotional maturity are important. A high school diploma is prefered, and courses that promote communication skills are useful. Psychiatric aides are trained on the job, learing duties through informal demonstrations and sometimes in formal classes.

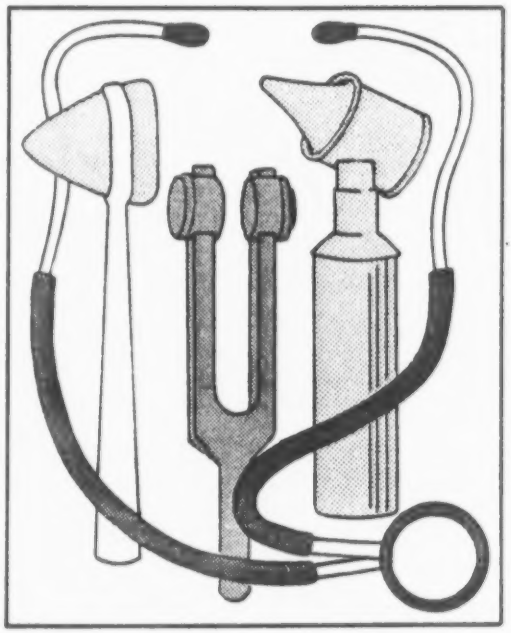
Outlook

Population growth and concern for the care of the mentally handicapped has led to an increase in mental health care facilities. The number of workers in this area has grown in the past decade and demand remains high.

Areas of Employment

- psychiatric hospitals
- mental health centers
- schools for the handicapped

11. Nursing and Physician Extender Services



Physician's Assistant

079.364-018

With the increased needs for medical services and doctors' high workload in the 1960s, the idea of training a new health care professional to provide some of the patient services came into being. These professionals are physician assistants--PAs--who perform technical procedures and provide patient care under a physician's supervision. Among some of the tasks are taking patients' histories, physical examinations, making preliminary diagnoses, ordering or performing laboratory tests, suturing minor wounds and handling emergencies. By assuming these responsibilities, PAs enable physicians to attend to more specialized activities and see more patients. Some of the other activities include counseling of patients and their families, and providing instruction on preventive health care topics and nutrition.

The employment of PAs has grown in popularity as indicated by a single training program with four students in 1965 to over 50 programs today. They may work in a variety of settings such as private practice, clinics, or hospitals--in essence, wherever a physician can be assisted. Most PAs are trained in general medicine. There are, however, specialized training programs. Some examples are urologic physician assistant, surgeon's assistant, orthopedic physician assistant, and childbirth associate.

People who have entered this profession have come from a wide variety of backgrounds. The first four PA graduates were former military medics. Others have had backgrounds in nursing, respiratory therapy, other allied health fields, or degrees in the sciences. Today, however, more people are entering the profession through direct training programs.

New Jersey is currently the only state where PAs are not allowed to practice. However, this situation may soon change.

Personal Qualifications and Training

Interest in patient care, knowledge in the sciences, emotional stability, and critical thinking skills are all important qualities for persons desiring to work in this area. Training programs vary from two to four years in length. Persons entering two-year programs usually have had

two years of college or some college and prior experience in the health care field. Some states require PAs to be licensed. PAs are certified by the National Commission on the Certification of Physician Assistants, after passing its examination.

Outlook

Studies have indicated that PAs contribute to more efficient health care delivery as well as reduce patient costs. On this basis, one can predict that the demand for PAs will continue to increase. Physician assisting is a profession that is gaining greater recognition and support.

Areas of Employment

- physicians' offices
- hospitals
- clinics
- extended care facilities
- government health agencies
- private health agencies

For Additional Information

Association of Physician's
Assistant Programs
2341 Jefferson Davis Highway,
Suite 700
Arlington, Virginia 22202

Schools in New Jersey

Livingston College
Rutgers - The State University
New Brunswick, New Jersey 08903

Rutgers - The State University
New Brunswick, New Jersey 08903

UMDNJ - Rutgers Medical School
New Brunswick, New Jersey 08903

12. Pharmaceutical Services

Pharmaceutical Detailer

Pharmacist

Pharmacy Helper

12. Pharmaceutical Services

Pharmaceutical Detailer

262.157-010

Pharmaceutical detailers or professional service representatives, represent pharmaceutical firms and provide drug information to physicians, dentists, and other health professionals. They keep those who prescribe or dispense drugs and medications up-to-date on new developments. They also offer information about the proper dosage, use, and effects of the products. Pharmaceutical detailers serve as the link between the drug industry and the medical community and, of course, try to develop more customers for their product. Therefore, they must be thoroughly knowledgeable about the technical aspects of their products (chemistry, physiological effects, merit, safety, etc.) and competitors' products. An understanding of business and public relations is also important. They are commonly referred to as "detail" men or women because they provide all the details about the particular drug.

The job of a pharmaceutical detailer requires extensive travel because they must personally call on the health professionals at their work place. These places range from physicians' offices, pharmacies, hospitals, clinics, nursing homes, drug wholesalers, to pharmacy schools.

Personal Qualifications and Training

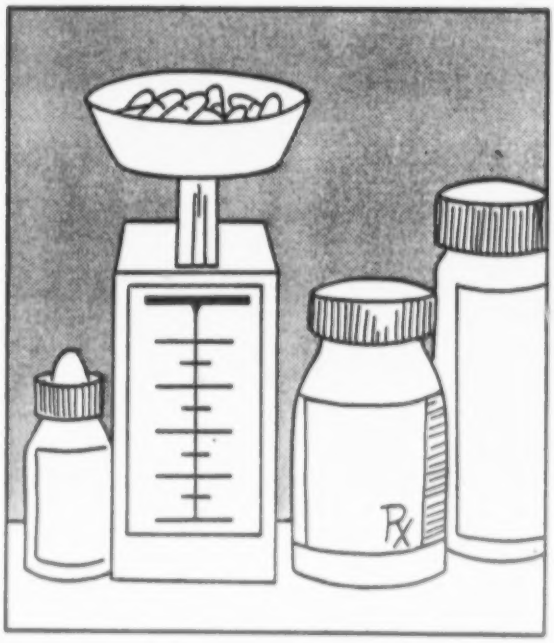
A pharmaceutical detailer should have a pleasing personality, be able to interact with a variety of different people, be well organized and be able to learn new things quickly. A good memory is also a valuable asset. There is no prescribed course of training for this occupation. Companies hire college graduates with degrees in business, education, liberal arts, psychology or the sciences. College courses that include science and business are especially desirable. Pharmacists who enjoy travel and working with people are particularly well qualified for work in this area. Also, new drugs are often used for very specific purposes. As a result, there is a growing trend to hire nurses, technologists and other health care personnel who have had experience in working with patients with particular types of illness or disease.

Specialized training is provided directly by the employer. Training does not end once one is on the job, but is an ongoing process as new products are introduced.

12. Pharmaceutical Services

Pharmacist

074.161-010



Pharmacists fill prescriptions of drugs and medicine ordered by doctors and dentists. They possess specialized knowledge about the composition of drugs, their usage and effects on the user. They may also compound or mix chemicals to produce medicine in tablet, powder or liquid form, but this activity is becoming less frequent. Pharmacists serve as important information specialists and health educators to the public and doctors who rely on them for accurate and up-to-date knowledge about various medications. They instruct patients on how to apply or take medication and alert them about possible side effects. In addition, they must be knowledgeable about health problems in order to offer advice about the hundreds of non-prescription drugs available to the public.

COMMUNITY PHARMACIST - Community pharmacists are perhaps the best known member of the pharmaceutical profession. They own or work in a local pharmacy or in a pharmacy of a chain store. Their duties include dispensing prescriptions, responding to health inquiries, maintaining records, and ordering supplies. Managerial, administrative, and public relation skills are important because many pharmacists are also the store manager. They oversee the daily operations of a drugstore which also sells non-pharmaceutical merchandise. Other responsibilities are hiring, training,and supervising the sales and delivery staff. Pharmacists who are owners or part owners of a pharmacy need good business and organizational skills.

HOSPITAL PHARMACIST - With increasing numbers of hospitals and other types of health care institutions, many more pharmacists practice in hospital settings. Hospital pharmacists deal less with the public-at-large and more with the health care team, consulting with doctors about patients' medication programs/schedules and providing nurses with information about how to administer drugs and drug reactions. For example, patients in hospitals often need to receive their drugs intravenously. Therefore, the pharmacist must make the sterile IV solutions and check that they are properly given to the patients. In larger hospitals pharmacists perform more administrative and teaching duties--managing the distribution of pharmaceutical services and insuring that patients receive correct and safe drug treatment. Because specialized knowledge about hospitals is required, hospital pharmacists receive additional training through hosptial residency or graduate pharmacy programs.

INDUSTRIAL PHARMACIST - A number of pharmacy school graduates work for pharmaceutical manufacturers. Industrial opportunities are particularly favorable in New Jersey which has some of the world's largest pharmaceutical firms. Pharmacists in the manufacturing industry may work in research and development of new drugs, drug testing, controlling the quality of production as well as developing educational materials for public information and marketing or sales.

PUBLIC PHARMACIST - Pharmacists employed by federal, state or community agencies fall into the category of public pharmacists. While the majority work as dispensing pharmacists in government hospitals, institutions and clinics, public pharmacists also work for numerous regulatory agencies. These regulatory agencies are concerned with insuring the quality and safety of consumer products, such as food, drugs, cosmetics and medical devices. Pharmacists in these agencies may test and evaluate new drugs or food, conduct drug research, inspect manufacturing facilities or write consumer information materials.

Personal Qualifications and Training

Ability to make wise and accurate judgments, to communicate effectively, to work well with one's hands, and to attend closely to detail, are important traits in this profession.

High school college preparatory courses with an emphasis in the sciences (biology, chemistry and physics) and mathematics are important to gain entrance into colleges of pharmacy. All practicing pharmacists must be licensed. To qualify for a license one must graduate from an accredited pharmacy college, and pass a state board examination. The length of post high school study varies among the pharmacy schools. Schools granting a BS degree in pharmacy require five years of study while schools granting a doctor in pharmacy degree require at least six years of study.

Outlook

The demand for pharmacists is expected to grow with population growth, longer life expectancy and expansion of health care facilities. Opportunities for community pharmacists may be greater in more rapidly expanding suburban areas. The largest number of job openings will be in hospitals, clinics, nursing homes and other health facilities. In those settings, pharmacists will work closely with doctors, nurses and therapists as part of a health care team, providing consulting services.

Areas of Employment

- pharmacies
- hospitals
- clinics
- nursing homes
- pharmacy schools
- pharmaceutical manufacturers
- government agencies
- Armed Forces

Schools in New Jersey

Rutgers - The State University of New Jersey
College of Pharmacy
New Brunswick, New Jersey 08903

For Additional Information

American Association of Colleges
of Pharmacy
4630 Montgomery Avenue
Bethesda, Maryland 20014

American Council on
Pharmaceuticals
One East Wacker Drive
Chicago, Illinois 60601

12. Pharmaceutical Services

Pharmacy Helper

074.387-010

Pharmacy helpers work under the supervision of a pharmacist and perform duties such as: mixing pharmaceutical preparations, checking inventory and ordering supplies, labeling and packaging prescriptions, keeping records, maintaining the work area, and making deliveries. A pharmacy helper assists in a wide variety of tasks to insure the efficient delivery of pharmacy services to patients.

Personal Qualifications and Training

Alertness, accuracy, attention to detail and neatness are important personal characteristics for this type of work. Most pharmacy helpers are trained on the job after high school graduation. Because of the medical/technical nature of the work, employers look for people who have work experience in hospitals. Science and typing courses in high school are especially useful for this position. The Armed Forces offer formal training programs in this area. Schools in some areas are beginning to offer associate degree programs for Pharmacy Technicians.

Outlook

At present there is only a moderate need for pharmacy helpers. However, as the number of formal training programs increase and prepare graduates to perform more responsible duties, the demand for pharmacy helpers (pharmacy technicians) may increase.

13 Rehabilitation Services

Art Therapist

Audiologist
Speech Pathologist
(Speech Therapist)

Corrective Therapist

Manual Arts Therapist

Music Therapist

Occupational Therapist

Occupational Therapist Assistant

Orthotist
Prosthetist

Physical Therapist

Physical Therapy Aide

Physical Therapist Assistant
(Physical Therapy Technician)

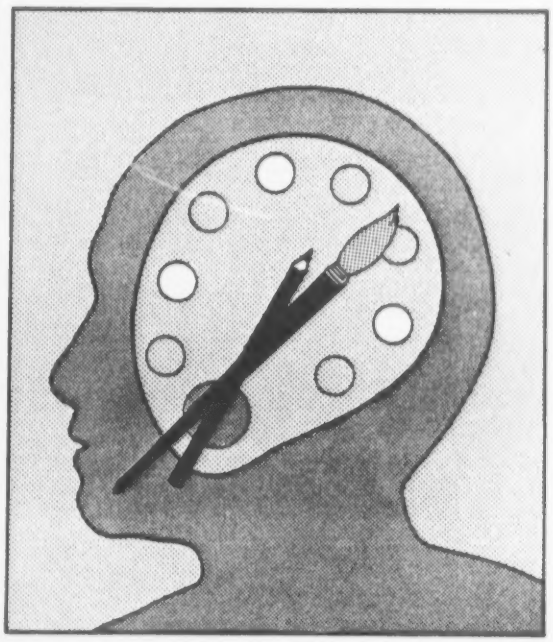
Recreational Therapist

Therapeutic Recreation Technician
(Recreation Assistant)

13 Rehabilitation Services

Art Therapist

076.127-010



Art applied in therapy is a relatively new idea, considering that art is one of the oldest forms of human communication. It communicates at a more basic level and as such has proven to be a very useful and effective form of therapy. Art provides a means to express one's feelings, emotions, and ideas. It is also a creative process that leads to greater self-awareness and personal growth, and can help in resolving emotional conflict. Art therapy is thus used with patients of all ages and in numerous settings.

Art therapists combine their knowledge of the visual arts with human behavior to assist patients in overcoming their handicaps and enhancing their personal development. Observing and evaluating a patient's behavior and artwork, the art therapist diagnoses the patient's needs and develops a treatment plan. Appropriate art activities are designed and provided. For example, a young child may be unable to tell an adult his or her frustrations, but those feelings can be expressed through his/her artwork. How that child can best be helped can then be determined.

Art therapists may work with patients individually or in groups. Depending on the patient and his/her needs, art activities are used to treat abnormal behavior, serve as a form of rehabilitation, help a patient gain self-confidence, or to develop a better understanding of oneself.

Personal Qualifications and Training

The ability to work with all types of people, understanding of others, and patience are important qualities for this work. Although one need not be a trained artist, one should have a variety of art experiences. High school courses in the arts and social sciences are useful preparation. A master's degree in art therapy is the preferred training for employment. However, clinical training after one has received a bachelor's degree is offered by some institutions. Persons who enter graduate programs in art therapy usually have a bachelor's degree in liberal arts, art, psychology or education.

Outlook

This is a small but growing profession. Opportunities are expected to be good with increased demand for health services and the greater emphasis on rehabilitation. Also, research in the area of art therapy and psychology has led to new and more sophisticated applications of this specialty.

Areas of Employment

- hospitals
- clinics
- rehabilitation centers
- community centers
- schools
- nursing homes
- prisons

Schools in New Jersey

Trenton State College
Trenton, New Jersey 08625

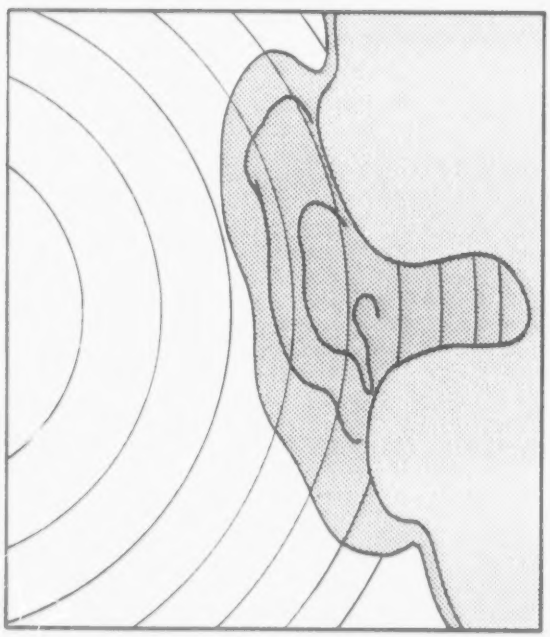
For Additional Information

American Art Therapy Association
428 E. Preston Street
Baltimore, Maryland 21202

13 Rehabilitation Services

076.101-010 Audiologist

076.107-010 Speech Pathologist (Speech Therapist)



Speech and language are unique human abilities that are the basis of our rich life experiences. Yet, speech disorders are common. It is estimated that one out of ten Americans cannot speak or hear clearly. Being unable to communicate effectively places one at a disadvantage both in social and work situations. Specially trained to help people with speech and hearing disorders are speech pathologists and audiologists. They diagnose and evaluate speech, hearing and language problems, and plan and conduct treatment programs.

Although speech pathologists focus on speech and audiologists on hearing, each must be knowledgeable about the other area. Speaking and hearing cannot be easily separated. For example, an audiologist may need to train a person with hearing loss how to speak. Similarly, a speech pathologist may need to know about a patient's hearing difficulties in order to provide the proper type of speech therapy.

Audiologists use a variety of testing equipment as well as patients' background information to determine the extent and cause of the hearing loss. The course of treatment is then developed. Treatment may include hearing aids, counseling and guidance, speech reading and speech training. An important aspect of the work is helping patients adjust to their disability so that they can participate more fully in everyday living, school, and work.

Speech disorders result from a variety of different causes. Among those are impaired or loss of hearing, brain injury, cleft palate, mental retardation, emotional problems, or a combination of several factors. Since speech problems often are symptoms of more complex disorders, speech pathologists must be skilled in diagnostic tesing to accurately evaluate the patient. They, in many instances, may need to work closely with physicians, psychologists, physical therapists and counselors in designing the proper course of treatment.

Nearly one-half of all speech pathologists work in the public schools, especially at the elementary level. When students first enter school is frequently the time that speech impairments are first detected. Early therapy can avert possible learning and behavioral problems of students. In the schools, speech pathologists devote a large part of their time in testing and evaluating students, in addition to providing therapy.

Other speech and hearing therapists work in hospitals and clinics where more severe disorders are treated. A number of speech pathologists and audiologists conduct research to explore the origins of hearing and speech disorders and to develop improved treatment procedures. Teaching at colleges and universities is another workplace.

Personal Qualifications and Training

Persons who wish to enter this field should possess a high degree of patience, enjoy working with people and be good problem solvers. Undergraduate degree programs are offered by a number of colleges and universities. A larger number offer master's degrees. A master's degree is required by many states and government agencies. To qualify for certification by the American Speech and Hearing Association, one must have a master's degree, one-year clinical training, and pass the national examination. A teaching certificate is required to work in public schools in New Jersey.

Outlook

Growth in population and improved diagnostic techniques are expected to create a continued demand for speech pathologists and audiologists. Many school children who were thought to have learning disabilities turned out actually to have language or hearing disorders. This finding has emphasized the importance of earlier diagnoses and treatment. As a result, the need for therapists has increased.

Persons with a master's degree will have more opportunities in the job market. However, the large number of graduates in this field may make for keener competition in areas where large numbers of therapists are in practice (e.g., large metropolitan areas).

Areas of Employment

- public schools
- hospitals
- clinics
- government agencies
- colleges and universities

Schools in New Jersey

Kean College of New Jersey
Union, New Jersey 07083
(BA and MS programs)

Montclair State College
Upper Montclair, New Jersey 07043
(BA and MA programs)

Richard Stockton State College
Pomona, New Jersey 08240
(BS program)

Rutgers - The State University
of New Jersey
Douglass College
New Brunswick, New Jersey 08903
(BA program)

Rutgers - The State University
of New Jersey
The Graduate School
New Brunswick, New Jersey 08903
(MS program)

Trenton State College
Trenton, New Jersey 08625
(BA, MS and MEd programs)

Seton Hall University
South Orange, New Jersey 07070
(BA and MA programs)

William Paterson College
Wayne, New Jersey 07470
(BA and MS programs)

13 Rehabilitation Services

Corrective Therapist

076.361-010

The value of exercise in recovery from disease and injury and overcoming disabilities gained recognition during World War II. It was found that wounded servicemen who participated in physical reconditioning programs had a shorter hospital stay. Also, their emotional problems were reduced. Thus, the profession of corrective therapy--physical education applied in medical treatment--became firmly established.

Corrective therapists treat patients using exercise and physical education techniques, following the program prescribed by the patient's doctor. Activities are designed to help patients coordinate and regain muscle use and prevent muscle deterioration. They work with other members of the health care team in developing the patient's treatment plan. Patients may range from handicapped children to injured athletes to persons with new artificial limbs. Treatments vary with the patient and type of disability. Some are individual exercises while others include group activities or sports. In therapeutic exercises, corrective therapists may assist patients in the use of specialized equipment such as exercycles, tables with weights and pulleys, parallel bars, and other devices.

Corrective therapists need to be knowledgeable about various forms of illness and injuries in order to provide the appropriate therapy. Their sensitivity to their patients' feelings and desires guides them in adjusting the extent and length of a therapy session. They must be able to assess patients' capabilities in order to provide challenging activities without overstressing or frustrating their patients.

Personal Qualifications and Training

Persons entering this field should have an interest and dedication in helping the handicapped and disabled. It requires a high level of patience and understanding of others. High school courses should include the sciences and social sciences. Corrective therapists are college graduates with a bachelor's degree in physical education and an additional one-year specialized graduate study in corrective therapy, plus 400 hours of supervised clinical work. They are certified by the American Corrective Therapy Association.

Outlook

With the increasing emphasis on exercise in medical treatment, corrective therapists are employed in an ever increasing number of different settings. Also, with population increase and an aging population, more therapeutic services will be required. Hence, the demand for corrective therapists is expected to be higher than for the average of all other occupations.

Areas of Employment

- veteran administration facilities
- rehabilitation centers
- public schools
- hospitals
- mental institutions
- community health centers
- alcohol and drug treatment centers
- camps for the handicapped

Schools in the Nearby Area

CUNY
Lehman College
Bronx, New York 10468

Hunter College,
New York, New York 10021

New York University
New York, New York 10010

For Additional Information

American Corrective Therapy Association
Route Elm Hill
Jonesboro, Tennessee 37659

13 Rehabilitation Services

Manual Arts Therapist

076.124-010

Manual arts therapists use industrial activities in the training of disabled persons for living and working after hospitalization. Activities focus on helping patients learn or relearn skills for future employment as well as for everyday living. The goal is to build up patients' confidence and to provide them a means to learn a livelihood within the limits of their disability.

Therapy programs include activities in a simulated or actual work environment. They may involve metal- or woodworking, graphic arts or agriculture. In this way, patients become familiar with working in the outside world and gradually develop their independence. Manual arts therapists work with other members of the rehabilitation team in designing appropriate activities and in following patients' progress. Their role is that of a teacher--planning, organizing, and providing instruction. They need to be creative in designing learning situations that provide motivation and encouragement to their patients.

Personal Qualifications and Training

As teacher-therapists, persons in this occupation should possess patience, alertness to the needs of others, and creativity. Manual dexterity is important in working with tools and mechanical equipment.

A bachelor's degree in industrial art education or manual arts therapy plus a minimum of two months' clinical training is required. Manual arts therapists are registered by the American Association for Rehabilitation Therapy.

Outlook

Helping the handicapped or disabled enter or return to the work world has become more widely supported. As rehabilitation programs expand, the need for manual arts will increase accordingly.

Schools in New Jersey
(BA in Industrial Education)

Glassboro State College
Glassboro, New Jersey 08028

Kean College of New Jersey
Union, New Jersey 07082

Trenton State College
Trenton, New Jersey 08625

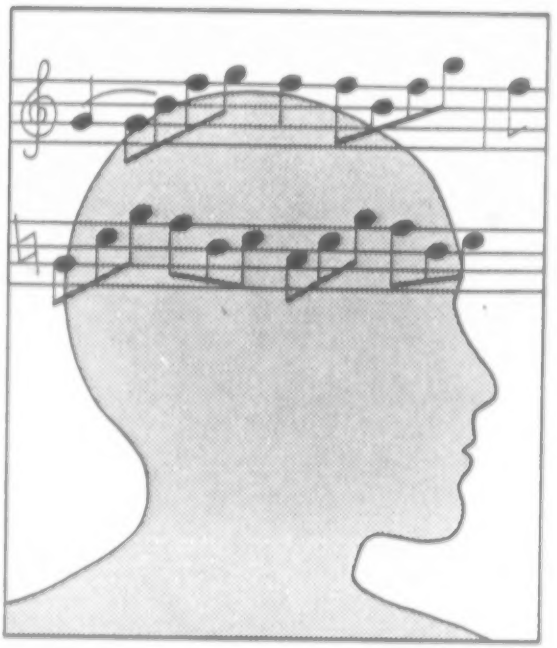
For Additional Information

American Association of
Rehabilitation Therapy
P.O. Box 93
North Little Rock, Arkansas 72116

13 Rehabilitation Services

Music Therapist

076.127-014



As we gain new knowledge about methods to help persons recover from illness, disease or injury, new areas of treatment and therapy emerge. Music therapy is one of these areas. Through music, patients have developed more positive feelings about themselves and others. The result is a more speedy recovery. Music therapy has been particularly useful in the treatment of mental illness. Music therapists work together with the patient's physician, psychiatrist and/or social worker to determine the patient's needs and capabilities and to set goals for the treatment. They combine their knowledge of music and psychology in designing programs and activities for their patients.

Most often the music therapist deals with the patient on an individual basis, using vocal and instrumental music, combined sometimes with body movement. Other times, they organize music programs and activities for groups of patients.

Personal Qualifications and Training

A good background in music and an interest in helping handicapped persons are useful prerequisites for this occupation. While a number of music therapists are graduates of music education programs, we are seeing more therapists who are specially trained in music therapy programs that offer a bachelor's or master's degree. In addition to a degree, a six-month clinical training at an approved facility is required. They are registered by the National Association for Music Therapy, or certified by the American Association for Music Therapy.

Outlook

With increased awareness in the value of music therapy, hospitals and institutions will further incorporate music therapy in their rehabilitation programs. Positions will increase accordingly. Music therapy is a challenging and creative occupation for one who desires to combine one's talents and interests in music, psychology and education.

Areas of Employment

- hospitals
- psychiatric institutions
- nursing homes
- schools for the handicapped
- public schools

Schools in New Jersey

Montclair State College
Montclair, New Jersey 07043

For Additional Information

National Association for Music Therapy
P.O. Box 610
Lawrence, Kansas 66044

13 Rehabilitation Services

Occupational Therapist

076.121-010

The role of an occupational therapist is to help physically or mentally disabled persons develop or regain skills so that they will be able to live a more fulfilling life. Clients range from children suffering from birth defects to accident victims to the elderly who have lost speech or movement due to a stroke. Because disabilities vary widely and affect people differently, therapy programs must be specially designed to meet the needs of the individual.

Occupational therapists must first determine what the person can do and what skills need to be developed. The testing and evaluation are usually conducted as a team effort. The team may include the patient's doctor, nurse, physical therapist, social workers, vocational counselor and other health care professionals. Goals for the patient are set. The occupational therapist then plans and directs the therapy program to meet those goals. Depending on the disability, the program may include recreational and educational activities. To help a mechanic with a hand injury regain the use of his/her hands, the therapist may teach him/her how to type. A person who is partially paralyzed may need to be taught how to dress and bathe, using one hand. Since each case is unique, there is no single type of therapy. Even with the same disability, one person may respond to the training while the other person may not. The therapist must be highly imaginative and creative in helping the patient achieve greater independence or regain the necessary functions for everyday living.

Some therapists (about two out of five) work with emotionally or mentally handicapped patients, while others work with the physically handicapped. A therapy program may only last a few weeks or extend over years and require a wide variety of skills training. In addition to devising craft and manual skill activities, therapists may design and make special equipment and devices to aid disabled persons in participating in activities.

Besides working with patients, a therapist may be involved in training and supervising student therapists, occupational therapist aides, and volunteers.

Personal Qualifications and Training

Teaching skills, imagination and patience are important characteristics for occupational therapy work. Moreover, one should have a strong background in the sciences and social sciences. Occupational therapists first complete a four-year college program with a major in occupational therapy and then receive six to nine months of training in a clinical setting. For persons who have graduated from a related health field, some schools offer programs that will lead to a master's degree in occupational therapy. To become a registered occupational therapist one must pass a certification examination given by the American Occupational Therapy Association.

Outlook

The demand for occupational therapists has been very high and is expected to continue in that direction. This is due to increased concern in rehabilitating disabled persons so that they can better lead a productive and more satisfying life. The success of therapy programs has also led to recognition of the importance of occupational therapy in patient treatment. Occupational therapists are being employed in a wider range of settings, such as in the public schools. There they work with students with mental retardation, learning disabilities, physical handicaps, or behavioral difficulties as well as consult with teachers and parents.

Areas of Employment

- hospitals
- rehabilitation centers
- community health centers
- mental health centers
- extended care facilities
- schools for the handicapped
- public schools
- industrial clinics
- private practice

Schools in New Jersey

Kean College
Union, New Jersey 07083

For Additional Information

American Occupational Therapy Association
1383 Picard Drive
Rockville, Maryland 20850

13 Rehabilitation Services

Occupational Therapist Assistant

076.364-010

Occupational therapist assistants work with disabled patients under the supervision of an occupational therapist. They help plan and design activities for patients in physical skill development, self care skills, and creative skills such as crafts and the arts. Simimilar to the occupational therapists, they teach patients to regain normal functions or develop alternative skills to overcome their disability. They organize craft projects, design and make equipment, and keep patient records.

Personal Qualifications and Training

Interest and ability to work with people, good physical and mental health, and patience are important for work in this occupation. Manual skills are also useful in order to teach patients how to use materials and tools. High school graduates may enter a one- or two-year vocational or technical school program or obtain an associate degree in occupational therapy from a junior or community college. The Armed Forces also offer training for this occupation. Because of the wide variety of activities that an occupational therapist assistant is involved with, high school preparation should include biology, typing, crafts, health and the social sciences.

Graduates of approved programs who have completed clinical training may take a certification test to become a certified occupational therapist assistant. This examination is administered by the American Occupational Therapy Association.

Outlook

The need for occupational therapist assistants has grown with the increase in therapy programs. While assistants are needed in all types of health care facilities, there appear to be greater needs in nursing homes and community health centers.

Schools in New Jersey

Atlantic Community College
Mays Landing, New Jersey 08330

Union County Technical Institute
Scotch Plains, New Jersey 07076

Areas of Employment and Additional Information

See under Occupational Therapist

13 Rehabilitation Services

078.261-022 Prosthetist
078.261-018 Orthotist

New materials and advances in technology and design have brought about major changes in the field of artificial limb construction. Where artificial limbs in the past were primarily a cosmetic appendage, today many types of artificial limbs offer greater function and mobility. As a result, professionals who work in this area now need higher levels of education and training. Prosthetists make and fit artificial limbs while orthotists make and fit orthopedic braces (orthosis) to support weakened body parts or to correct physical disabilities. Some work in both areas.

Prosthetic appliances are custom made to fit patients who have suffered loss of limb through disease or injury. They must be comfortable and provide patients with maximum mobility. Therefore, the prosthetist works closely with the physician and the patient to determine the patient's needs and design a suitable device to meet those needs. Design and production of the device depends on knowledge of the patient's condition and how to best promote mobility. Careful and exact measurements are taken, materials (plastic, leather, wood, steel or aluminum) are selected, and casts are made. Using the cast as a model, the device is then constructed, adjusted and fitted to the patient. Sometimes it is necessary to modify or redesign some parts to improve comfort and function. Finally, the patient is then instructed on its use and care.

Orthotists work in a similar manner with physicians and patients, applying their technical expertise to produce and fit an effective brace.

Prosthetists and orthotists must be knowledgeable about human anatomy and mechanics of body movement in order to produce devices that work well. They are craftsmen who combine scientific knowledge with their skills in design and construction.

Personal Qualifications and Training

Persons in this field should be skilled in and enjoy working with their hands and mechanical equipment. Good visual and design abilities are important qualities as well as patience and tact in working with the disabled. High school preparation should include courses in physics, biology, algebra, geometry, mechanical drawing, and metal and wood shops. Although it is possible to enter this field through on-the-job training and taking selected college courses, a bachelor's degree in prosthetics/orthotics is becoming the preferred route. Since 1980, the American Board for Certification in Orthotics and Prosthetics requires that candidates for certification have a bachelor's degree.

Outlook

Skilled and qualified professionals in this area are in high demand. With an increasingly more elderly population who need supportive devices and continued high numbers of automobile and industrial accident victims, as well as those disabled by disease, the need is expected to rise.

Areas of Employment

- private laboratories
- hospitals
- rehabilitation centers
- government agencies

Schools in Nearby Area

Medical School
University of New York
New York, New York 10010

For Additional Information

American Orthotic and Prosthetic Association
1444 N. Street, NW
Washington, D.C. 20005

13 Rehabilitation Services

Physical Therapist

076.121-014

Physical therapists work with patients who are disabled through injury or illness or who are born with a handicap that affects their movement. Their goals are to help patients regain or improve their mobility using muscle strengthening techniques and activities. Therapy methods include the use of exercise, massage, heat and cold, water and electricity.

Patients vary in age and type of disability. A patient recovering from leg surgery may require physical therapy to prevent the leg muscle from deteriorating because of disuse or poor blood circulation. Burn patients may be assisted with exercises in a water tank to keep their limbs mobile and to soften dead skin tissue for easier removal. A child with cerebral palsy may be taught how to crawl and perhaps eventually to walk. A victim of stroke who lost use of his arms may need exercises to relearn arm movements.

No two patients are identical. Physical therapists must therefore work closely with the patient's doctor and other members of the health care team to evaluate the extent of the disability and design the treatment plan. During the course of the treatment, the physical therapist must be constantly aware of the patients' needs to build up self confidence and keep up their spirits. Recovery or improvement is slow and often painful. So, in addition to knowledge about the function of muscles, nerves and joints, a physical therapist needs to understand human behavior and how to provide encouragement.

Although physical therapy for patients may begin during their hospital stay, many may require therapy long after discharge. While many physical therapists work in hospitals, others work in nursing homes, rehabilitation clinics, schools for handicapped children, and even the patient's home. With a growing interest in the development of new techniques, a greater number of physical therapists are engaged in research or teaching.

Personal Qualifications and Training

In addition to interest and abilities in science and teaching, physical therapists must possess tact and patience. Their sensitivity to people and their own emotional stability are important in helping patients learn to deal with disability and/or disfigurement. Physical strength and agility are useful when one must lift and support patients. Physical therapists are trained through a four-year bachelor's degree program in physical therapy. Persons with a bachelor's degree in other fields may enter an intensive one- or two-year program that grants a certificate or a master's degree. To practice in New Jersey requires a license.

Outlook

The job prospects for physical therapists continues to be favorable, growing faster than the average of all other occupations. The importance

of rehabilitation has been recognized by the public, and rehabilitation programs have expanded. The increase in nursing homes will also create new positions for physical therapists.

Areas of Employment

- hospitals
- rehabilitation centers
- nursing homes
- clinics
- schools for handicapped children
- government agencies
- college teaching

Schools in New Jersey

Kean College and UMDNJ
School of Allied Health Professions
Newark, New Jersey 07103
(joint program)

For Additional Information

American Physical Therapy
Association
1156 15th Street, NW
Washington, D.C. 20005

13 Rehabilitation Services

Physical Therapy Aide

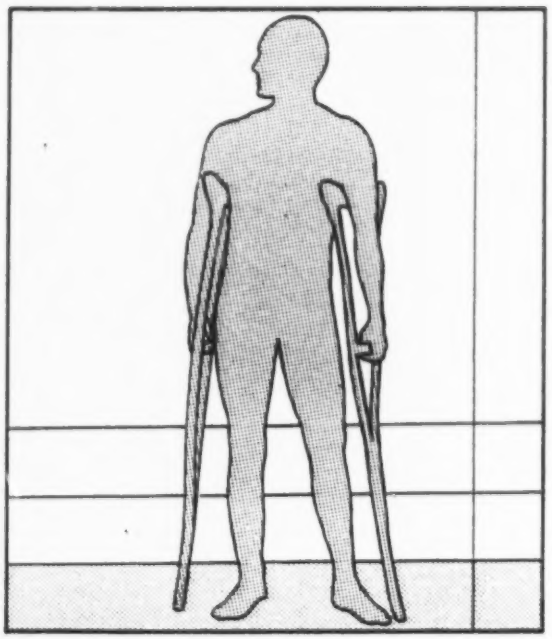
355.354-010

Physical therapy aides help patients get ready for their treatment such as helping them get into their artificial limbs or treatment equipment and transporting them to the treatment area. They may also assist therapists in testing and treating patients. Their work, to a large extent, may involve the care and preparation of the equipment and work area.

Physical therapy aides receive their training on the job following high school graduation. Employers tend to prefer hiring those with some hospital work experience. The extent of their duties and responsibilities will depend on the training given by the physical therapist and needs of the particular department.

13 Rehabilitation Services

Physical Therapist Assistant
(Physical Therapy Technician)
076.224-010



Working under the supervision of physical therapists, physical therapist assistants are involved in helping patients regain or develop their mobility. They often use special equipment to administer exercise, massage, heat, cold, light, ultrasound and electrical treatments. They instruct patients in exercises to use or strengthen their muscles. Their patients may have recently acquired artificial limbs, braces or splints and require instruction on how to use them. They may also prepare the equipment necessary for treatment such as hydro-therapy tanks, whirlpool baths, ultrasound machines and so on. Physical therapist assistants must closely observe patients' progress or response to treatment. They prepare reports for the physical therapist who evaluates the treatment program and makes changes if necessary.

Personal Qualifications and Training

Similar to physical therapists, physical therapist assistants should possess patience and tact. A cheerful disposition is also important as persons with disabilities need continual encouragement. Two-year associate degree programs in physical therapy are offered by colleges and community colleges. Persons practicing in New Jersey must pass a licensing examination.

Outlook, Areas of Employment, and Additional Information

See under Physical Therapist.

Schools in New Jersey

Atlantic Community College
Mays Landing, New Jersey 08330

Essex County College
Newark, New Jersey 07102

Fairleigh Dickinson University
Madison, New Jersey 07940

Union County Technical Institute
Scotch Plains, New Jersey 07076

13 Rehabilitation Services

Recreational Therapist

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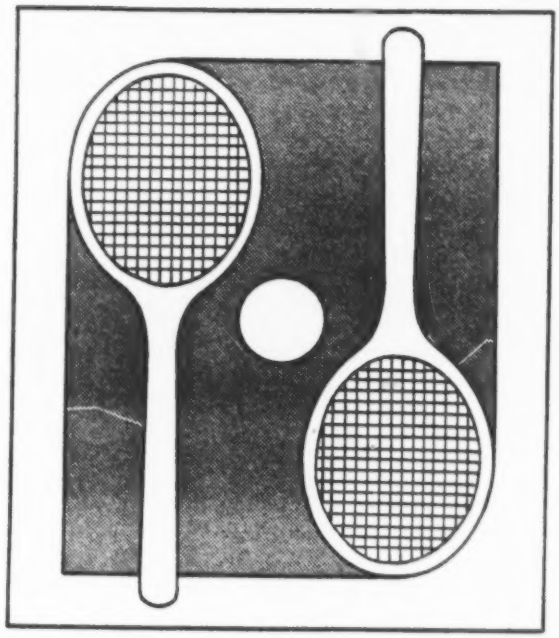


The use of recreation as therapy dates back to 3,000 B.C. to the Chinese who employed medical gymnastics to promote health. More recently, during World Wars I and II, the concern for rehabilitation of disabled veterans stimulated greater use of recreation as a form of therapy. Its demonstrated value has established recreation as an important form of treatment for a wide variety of health problems.

Recreation therapists plan, supervise and teach leisure skills to the physically, mentally, or socially handicapped to promote their rehabilitation. The diversity of activites may include arts and crafts, music, drama, dancing, gardening, hobbies, games, trips, and even community service projects. The recreational therapists need to understand the needs of their patients as well as the physical and mental demands of the activities. Appropriate activities are then selected and designed for individuals or groups of patients. Sometimes a sports activity has to be modified or incorporate new techniques so that the handicapped can participate. Examples that are familiar to us are basketball teams who play in wheelchairs or the blind who ski.

Therapeutic recreation is therefore the application of recreation and leisure activites to help the disabled or handicapped lead a fuller life, overcome their disability, and gain self-confidence. The programs are conducted in many different types of settings, hospitals, rehabilitation centers, mental health centers, camps for handicapped children, and nursing homes.

Personal Qualifications and Training

A wide range of different interests and creativity are important assets for one who works with people with different needs and abilities. Sensitivity to others, adaptability, and patience are qualities necessary in helping others overcome their disability. High school courses may include art, drama, music, psychology, and health. Participation in different extracurricular activities will broaden one's experiences as well as provide leadership opportunities. Recreation therapists usually have a bachelor's degree in therapeutic recreation or in one of the activity specialties such as art therapy. Persons employed in therapeutic recreation are registered by the American Association for Rehabilitation Therapy.

Outlook

The changing attitudes toward the disabled and new approaches in rehabilitation have greatly expanded and extended therapeutic recreation programs. Therapists are employed in many diverse types of settings and may find new opportunities in areas yet to establish programs. The demand for trained therapists is expected to be high. Some positions may require a master's degree.

Areas of Employment

- hospitals
- rehabilitation centers and related facilities
- community agencies
- schools for the handicapped
- parks and recreation departments
- extended care facilities
- nursing homes

For Additional Information

National Therapeutic Recreation Society
1601 North Kent Street
Arlington, Virginia 22209

Schools in New Jersey

Fairleigh Dickinson University
Madison, New Jersey 07940

Kean College
Union, New Jersey 07083

Montclair State University
Upper Montclair, New Jersey 07043

Trenton State College
Trenton, New Jersey 08625

13 Rehabilitation Services

Therapeutic Recreation Technician (Recreation Assistant)

A relatively new and growing position is that of the therapeutic recreation technician. This is because therapeutic recreation has expanded in scope, and therapists with bachelor's and graduate degrees have become more involved with administrative and research activities. Hence, the need for personnel to work directly with patients/clients.

Therapeutic recreation technicians (TRTs) teach leisure skills to the handicapped under the supervision of a therapist. The many different things that people do outside their workplace all come under the scope of recreational activities. Therefore, the work of TRTs can extend into a variety of areas. They plan and organize activities suited to the special needs of the individual or groups of patients. TRT duties may include preparing materials for arts and crafts, planning music programs, organizing games and sports, or giving dance instruction. At all times they must be alert to the patient's progress and how activities can assist in the rehabilitation process.

Personal Qualifications and Training

Interest in helping the handicapped, patience, and imagination are important for working in this area. Skills in planning, communicating, and leading others are especially desirable. High school courses should include biology, social sciences and the arts. Participation in a range of extracurricular and sports activities also provides good preparation. Formal programs for therapeutic recreation technicians are offered by community colleges and lead to an associate degree.

Outlook

As discussed above, there is a high demand for trained personnel in this area. This trend will continue as recreation therapy is applied in new areas and research provides greater knowledge about the effectiveness of various types of programs.

Schools in New Jersey

Atlantic Community College
Mays Landing, New Jersey 08330

For Areas of Employment and Additional Information, see RECREATION THERAPIST.

IV. Planning a Career

A. Who am I?

Finding out more about yourself is the first step in selecting and planning a career. This may be the most difficult part of the process. Each person possesses a complex array of traits, and we all are in the constant process of change. You at age five may be very different from what you are today--what you like to do, who you select for friends, what things are important to you, and how you behave--all undergo slight or major modifications. But because changes do occur does not mean that we cannot learn more about ourselves. What it does mean is that one cannot rely completely on one type of measure or measures based only on a segment of the past.

Planning is thinking about yourself in the future, but it also includes an understanding of yourself now. For the most part, it is hard to step away from yourself and make a totally objective evaluation--seeing yourself in an unbiased way or as someone else may judge you. This is why interest and personality surveys, ability tests and performance in school work can supply some important clues to help identify possible career directions.

The results of measures such as the Strong Campbell Interest Inventory indicate in a general way how your characteristics match those characteristics of people who are in a particular career field. Even within a given field, people vary greatly, although they may share a number of similar characteristics. Also, success in a given area may depend on a special set of characteristics, so it is important to discover whether you possess those needed qualifications. However, it is important to keep in mind that many skills and abilities can be learned and further developed. It just so happens that some people have special aptitudes, such as an aptitude for working with tools, so that mechanical work comes easily and they do not have to work as hard to do well in that area. Nonetheless, a person with less aptitude in that area can develop mechanical skills but simply takes longer. Very often we may think we do not have the skills, but it is only because we did not have a chance to develop them or avoided developing them.

One personality factor that we have no good way of measuring is motivation. Yet this factor is perhaps the most important in determining success. This is also the factor that you have greatest control over. To answer the question, "Who am I?", a good place to begin is to examine what motivates you. "What makes you want to do certain things?" "What enjoyment do you gain from an achievement?" "Why do you persist in some activity even when it is a hard struggle?" These are questions that only you can answer.

An easy method for gaining insight into what motivates you is to keep a notebook of your activities. Periodically, jot down what you have done and below it indicate what you liked best about that activity and what you most disliked about it. Also explain why you liked or disliked something. Include your school courses, sports, things you do with friends and family,

outside activities, special events, what you do when you are alone, and so on. After a few weeks or months, review the entire listing. See if you can find a pattern of interests and desires. These interests and desires are strong motivating forces. Are some stronger than others? Are there several types of interests and desires? Are your interests changing in certain directions? Do certain activities allow you to combine several interests? What things seem to be most important to you?

Share your notebook with a friend, family member or teacher. Have him/her identify your pattern of interests. His/her input can give you additional insight into your self. We frequently think we know ourselves so well that we may entirely miss some important characteristics. Discuss with that person some of the many ways in which you might apply your interest, skills and abilities in various work situations.

In your listing are you able to gain some clues about what you value--what gives you great satisfaction. Knowing what you value is important in identifying and finding the right career for you. Think about some of the things that you might want in a job.

- Problem solving and decision making?
- Working with different types of people?
- Working in the forefront or behind the scenes?
- Working alone and doing detail work?
- Working with information or machines?
- Following standard routines?
- Being creative or testing new ideas?
- Performing work that requires physical skills?

Becoming more aware of your interests, what keeps you interested and what you view to be important will make your finding a career direction much easier.

B. Making Choices

The next to impossible question to answer is "How will I know that I have made the right career choice?" There is no way of knowing for sure until you are finally on the job. Unless you can project yourself into the future, there will always be that degree of uncertainty. However, you can make better and more accurate choices by building up a store of information. The more you know about different careers the more confidence you will have in your decision.

Here are some ideas that may be helpful in your selection process.

- In school, try courses you have not before considered. You will not know whether you like something or not unless you have tried it. You may be pleasantly surprised to discover that you have interests and abilities in something you had earlier dismissed or even avoided. Remember, you are growing and changing, and your likes and dislikes also change. Do you have a favorite food now that you refused to eat as a young child? Like our food preferences, our interests change, too. Also, as we grow older, we develop new skills and abilities. What may have been difficult when you were young can be easier now. Remember that you are continually learning and you may not even realize what you have gained from your learning experiences until you encounter new challenges that call for those skills. Read about different occupations, even ones you think will not appeal to you. You may discover that your image of a job is very different from what it is like in the real world. Once you have found a few that you think are interesting, look for additional materials that describe what persons in that occupation do on a day to day basis. Descriptions of that type can provide you with more insight into the work than merely a list of responsibilities and activities.

- Find a summer or part-time job that may be related to what you think matches some of your interests. Also, there are many volunteer opportunities. In the health field you might try volunteer work in hospitals, medical centers, clinics, health agencies, nursing homes, schools for the handicapped, summer camps, medical schools and so on. Volunteering allows you to select the area you want to explore. You should indicate your interests and have the organization match your interests with the volunteer activity. Take advantage of opportunities to talk to all types of health personnel.

- Don't discard a career possibility simply because you think it is too hard. Everything we do requires work, and sometimes even quite a bit of drudgery. However, we learn by doing, and once we have learned a task it becomes much easier. Making a mistake is no offense; in fact, learning from mistakes is one of our best teachers. Just because you don't do something well now, does not mean that you can't learn to do it well in the future. It's a matter of wanting to do it!

- Recognize that in every job one must make "trade-offs". That is, there are few jobs that can meet all our requirements; advantages must be weighed against disadvantages. Making "trade-offs" means accepting some displeasures in order to gain the desired benefits. Jobs that offer high salaries, for example, may mean that one has more responsibilities, makes difficult decisions, works longer hours, has to be continually studying to keep up with new developments, or requires a long and extensive training period.

C. What is Out There and You

The health field is the second largest industry in the United States, employing over five million workers. It is also an industry which is expected to further expand in the next several decades. So, career opportunities are good. Its many attractions include competitive salaries, job security, and opportunity to serve others. As a field that is experiencing rapid technological advances and changes in the delivery system, the opportunities within even a single profession are becoming more diverse. Many of our stereotypic images of what a health care worker does no longer hold true. Even the way a physician works today is quite different now that more sophisticated diagnostic tools are available. The different settings where one can work will have different activity requirements. Also, new occupations are being created. New medical equipment require persons with special training to operate them. Others do not rely heavily on science and math, but on management and interpersonal skills. Many jobs depend on the experience you gain as you work so experience provides those opportunities for advancement. In the health field there are many different ways to advance and develop one's career. The variety of possibilities makes this area challenging and exciting.

What is Out There and You

As you read about health occupations in this book, look at each to see how well it matches some of your interests. Select a few that you think seem intriguing. Try to include some from several of the service clusters. Remember you are at the exploring stage and should not exclude possibilities before you have had a chance to give them more thought.

Now you are ready to make some comparisons. A useful and easy technique is to prepare a chart such as the one shown on the next page. List the occupations you have selected across the top, and for each, answer the following questions, filling in your responses in the corresponding box. Refer to the occupation descriptions in this book.

- What are some of the activities?

  Consider whether the work is performed alone or with others. What is the main purpose of the work? What materials and equipment are used?

- Where and how is the work performed?

  Consider the different places which employ people with this training. How might the settings influence the type of activities erformed? Does the work require physical stamina such as heavy lifting or close, detailed observations? Does one work at one place or move around frequently?

SAMPLE

Comparing Some Occupations

Title of Occupation				
What are some of the activities?				
Where and how is the work performed?				
What skills and qualifications are important?				
What training is needed?				
What gains or pleasures can one expect from the work?				
Is this occupation similar to others?				
What are some of the ways for advancement?				

- What skills and qualifications are important?

  Consider some of the special requirements that are needed for success in this occupation. Are manual dexterity and working well with one's hands important? Does one need to be a keen observer? Is one required to make critical decisions?

- What training is needed?

  Consider what one must learn and the educational requirements. How long is the training? What are the different ways one can obtain the training?

- What gains or pleasures can one expect from the work?

  Consider how the work may satisfy one's goals. These goals might include salary level, contribution to society, job security, use of creative talents, making decisions, prestige, social opportunities and so on.

- Is this occupation similar to others?

  Consider what characteristics this occupation shares in common with others. How might it differ? Might it be possible to prepare for both and make a selection later?

- What are some of the ways for advancement?

  Consider the different opportunities in the occupation. What additional training will one need for the next level? How might the skills learned be applied in another area?

To complete the chart you may also wish to check some other books or materials for additional details about the occupations. Or, talk to persons who work in the field. When the chart is completed you are ready to make some comparisons. Ask yourself some of the following questions.

- What did you like most about each of the occupations? The least?

- How might your skills and interests be applied in each of the occupations?
- What type of work did you find most challenging? Most interesting?
- Compare the training required for each occupation. How much time might you wish to devote to your preparation?
- Which of the occupations will best enable you to further develop your interests?
- Which of the occupations offer a wider range of opportunities?

In making these comparisons, you can begin to see the occupations from different perspectives. This evaluation technique also helps you to better identify your interests as you proceed to eliminate areas that are less appealing to you. Jot down your ideas and comments on the chart. Use a different color pen so that your thoughts are highlighted when you refer back to the chart at a later time.

Make a few more charts. Include some occupations about which you know little. When you have several of these charts, see if you can find any trends or direction in your thinking. What types of work seem to have most appeal to you? If students in your class have also completed charts, share the charts with one another. See if there are other possibilities you have not considered.

D. What Type of Education?

The question of education is a major factor in planning a career. Nearly every job requires some type of training or formal studies. How much time you want to devote to education is important in making a career choice. In addition to time, finances enter into the decision. All these factors need to be carefully weighed against the benefits you will derive from your career. It is important to look down the road and try to see what you will be doing 10 or 20 years later, and whether you will find the work satisfying.

The amount of education needed is closely associated with the title of the job. With slight variations among health occupations, the following terms associated with a job title indicate the level of preparation needed to start working in the occupation.

> Technologist or Therapist: a bachelor's degree which includes clinical experience (4 years) or a bachelor's degree followed by clinical training.
>
> Technician or Assistant: an associate degree (two years) or certificate (one year of college, technical school or hospital training).
>
> Aide: On-the-job training; short-term specialized training; vocational or technical school training.

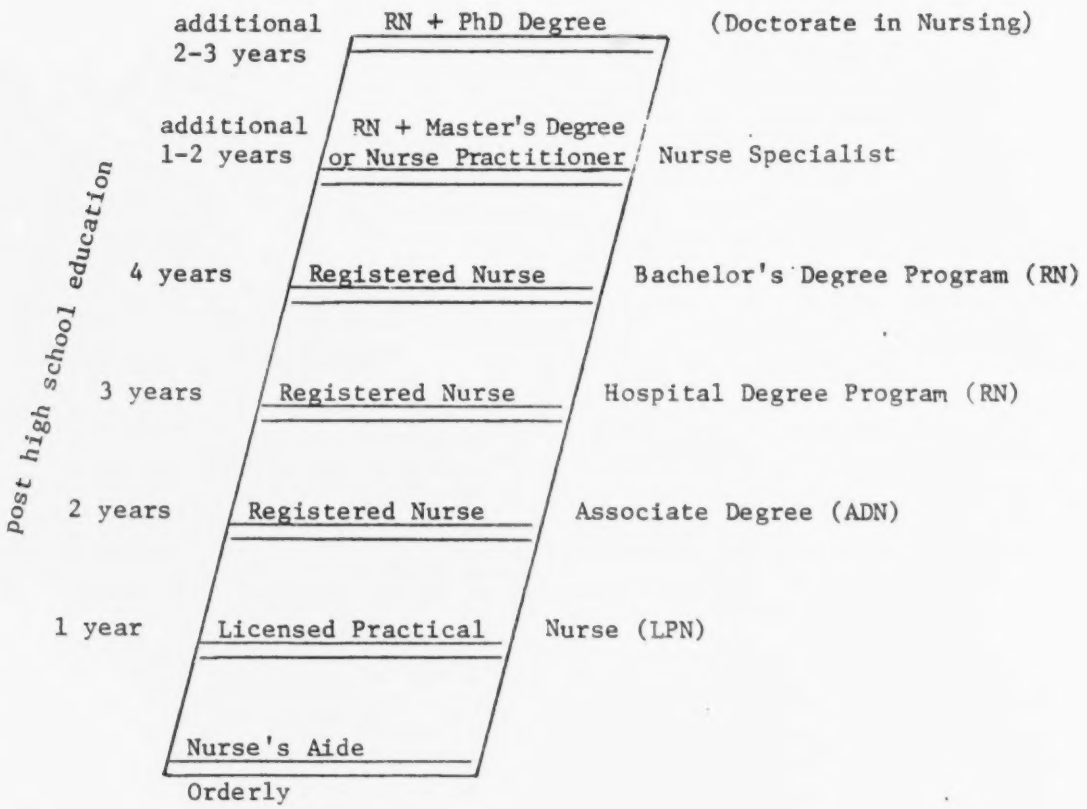
Career Ladders

In a number of health professions it is possible to start at a lower or entry level position and work one's way to higher levels through additional formal training and work experience. Depending on one's educational background, one can therefore enter the profession at different rungs on the career ladder. The career ladder for the nursing profession is shown on the next page. At the entry level position is the nurse's aide and orderly. One can train to become a registered nurse in one of three types of educational programs. These programs range from two to four years. Opportunities for advancement are possible through further education and training. Advanced training enables registered nurses to practice in extended roles such as pediatric nurse practitioner, nurse-midwife, public health nurse, school nurse, nurse anesthetist and so on. Nurses with Ph.D. degrees are found in higher administrative positions or teach in colleges, universities and medical schools.

Career ladders are not found in all professions and vary among the professions. Another concept for professional advancement is that of a career lattice. One advances by moving from one professional area to another related area through special programs. For example, a licensed practical nurse may, by entering an accelerated training program, become a

respiratory technician. Or, an operating room technician may train to become a physician's assistant. One's training in one profession can be used as a stepping stone to another profession. Accelerated programs have enabled people to switch or combine professions and advance their career in new directions.

Career Ladder for Nursing



Apprenticeship and On-the-Job Training

At one time before education was widely available, an apprenticeship or on-the-job training was the method by which one learned a trade. Schools, of course, have since assumed much of that role. Nonetheless, an apprenticeship continues to be a desirable training option for a number of occupations.

Apprenticeships are frequently found for newly emerging occupations where no formal education programs exist. Sometimes an occupation is small so there is not a high demand for schools to train persons in that area.

In apprenticeship programs, one is paid as one learns so that educational costs are eliminated. However, the salary is usually minimal, and the training period is longer. For example, apprenticeship in opticianry is three to four years, while formal education programs are usually two years in length. Since one must pass a licensing examination to practice in that profession, persons who have had formal classroom work often find it easier to pass the examination. In occupations where licenses are not required, this may not be an important consideration.

As the number of formal training programs become established, the number of apprenticeships tend to decrease. Moreover, employers prefer to hire trained personnel rather than conduct their own training programs. Hence, opportunities for apprenticeships vary and depend largely on the supply of experienced personnel.

Military Service and Training

Military service offers another alternative method to obtain training in the health field. In fact, the military now has its own medical school, The Uniform Services University of Health Sciences, which trains doctors and other health care professionals. Entrance into these programs varies with the occupation, and one cannot always be guaranteed a particular program. Some programs require one to serve several years before one is eligible to apply. For medical school, however, one must first be accepted for admission before one is required to enlist.

A number of military service health personnel are trained on the job, but this training may not always be equivalent to civilian training programs. Nonetheless, the military does offer a number of equivalent training programs which are approved by the American Medical Association. Depending upon the branch of service, they may include medical radiographer, nuclear medicine technologist, nurse's aide/orderly, physical therapist, surgical technologist, and so on.

Hospital Programs

Hospitals have always played a major educational role in the training of health care professionals. For professionals involved in patient care activities or specialized technologies, a large part of the training

involves in-depth clinical experience under supervision following college or classroom study. For a number of occupations, however, hospitals are the only source of training. At one time all nurses were trained in hospital diploma programs. Now a large proportion are trained in college degree programs.

Hospital-based programs provide clinical experience earlier so one can quickly get an idea of what the job entails. Having classroom study interspersed with clinical activities also can make the studies more interesting and meaningful.

Today, however, colleges are offering more degree programs in the health care field. Also, many of the supervisory positions require personnel with college degrees.

In some occupations, one can choose between hospital-based or college programs. When making a decision, it is important to consider what one eventually wishes to do in the profession. If one desires to do postgraduate work, one may first need to obtain a college degree. Hospital-based training is not always transferable into college credits.

Vocational and Technical Schools

Vocational and technical schools offer a number of certificate and diploma programs in the health field. New programs are being developed as some of the emerging occupations become more established, especially those that involve medical equipment and instruments.

Most programs are one year in length. In New Jersey these include programs for health assistants, medical assistants and licensed practical nurses.

College Degree Programs

In a number of health professions, one can enter at one of two levels, one with an associate degree and the other with a bachelor's degree. Some of these include medical laboratory technology, nursing, occupational therapy, physical therapy, respiratory therapy, radiation therapy and so on. Although the work in the profession may be quite similar, persons with a bachelor's degree assume more responsibilities, enter at a higher level, and usually receive higher salaries. They may also have more varied job opportunities such as in teaching and administration. Frequently, there is a higher demand for personnel with an associate degree than a bachelor's degree.

Bachelor's degree programs may also differ. Some include the clinical training within the four-year program, while in others one must obtain the clinical training after one has the degree. Some schools grant only a master's degree in the profession, while others offer a choice of a bachelor's or a master's degree.

Comparing Programs - What to Look For

Look closely at the various programs before making a decision. This is where you will need to sharpen your investigative skills! Become a good detective! The effort you make will be a good investment in your future.

Here are some useful hints:

- It is never too early to check out the different hospitals and schools that offer the program you want or think might interest you. Try to visit them and talk to both faculty and students.

- Compare the courses that are required in the programs. Try to determine what is taught in the courses by carefully reading the course description. You may find that courses in some programs are not particularly rigorous and may not provide sufficient preparation.

- Note the qualifications of the teaching staff. What degrees follow their names? Where were they trained? This is a good indicator of their level of experience as well as the quality of the school.

- Find out whether you need a license to perform the work. Will the certificate, diploma or degree granted by the program qualify one to take the licensing examination?

- Is the program or school approved? Accredited? Schools are approved by the state or federal government. Approval means that the school has met the minimum requirements established by the government body in order to operate. It does not distinguish the level of quality. Health occupation programs are usually accredited by the health profession organizations. Accreditation is more important in some health professions than others. In some, employers will only hire graduates from accredited programs. Quite often schools and programs are both accredited and approved.

- Higher tuition is not a good measure of quality. Some schools charge a lot but offer very little. A better measure is how easily their graduates find jobs, where they are employed, and their

starting salary compared to graduates from other schools. Drop-out rate is another measure. Schools with high drop-out rates mean that they have not carefully selected their applicants or that students are not satisfied with the program.

- Find out the size of the classes. Fewer students, of course, will mean that you will receive more attention and closer supervision. Learning comes more easily in small classes and as a result can be much more enjoyable.

- Examine the facilities of the school. Is the laboratory equipment up-to-date? This is especially important in an area which is experiencing rapid advances. Is there sufficient equipment for all students?

- Competition for jobs is keen in some occupations. Persons with advanced experience or who show creativity have added advantages. Does the school offer opportunities for advanced study or special research projects?

- If time and costs were not constraints, what would you consider to be an "ideal" education? Given the reality of these constraints, what training program comes closest to your "ideal"?

Intangible Factors

Intangible factors are those factors that cannot be readily measured because what may be important to others may not be important to you. In choosing from among programs you should also ask yourself the following questions:

- How important are opportunities to take courses outside your area of study? This may determine whether you should enter a college program or programs offered by hospitals or trade schools.

- How important are opportunities to meet people studying in other areas? This may help you decide on the size of the school and between residential schools or commuter schools.

- How far are you willing to travel?

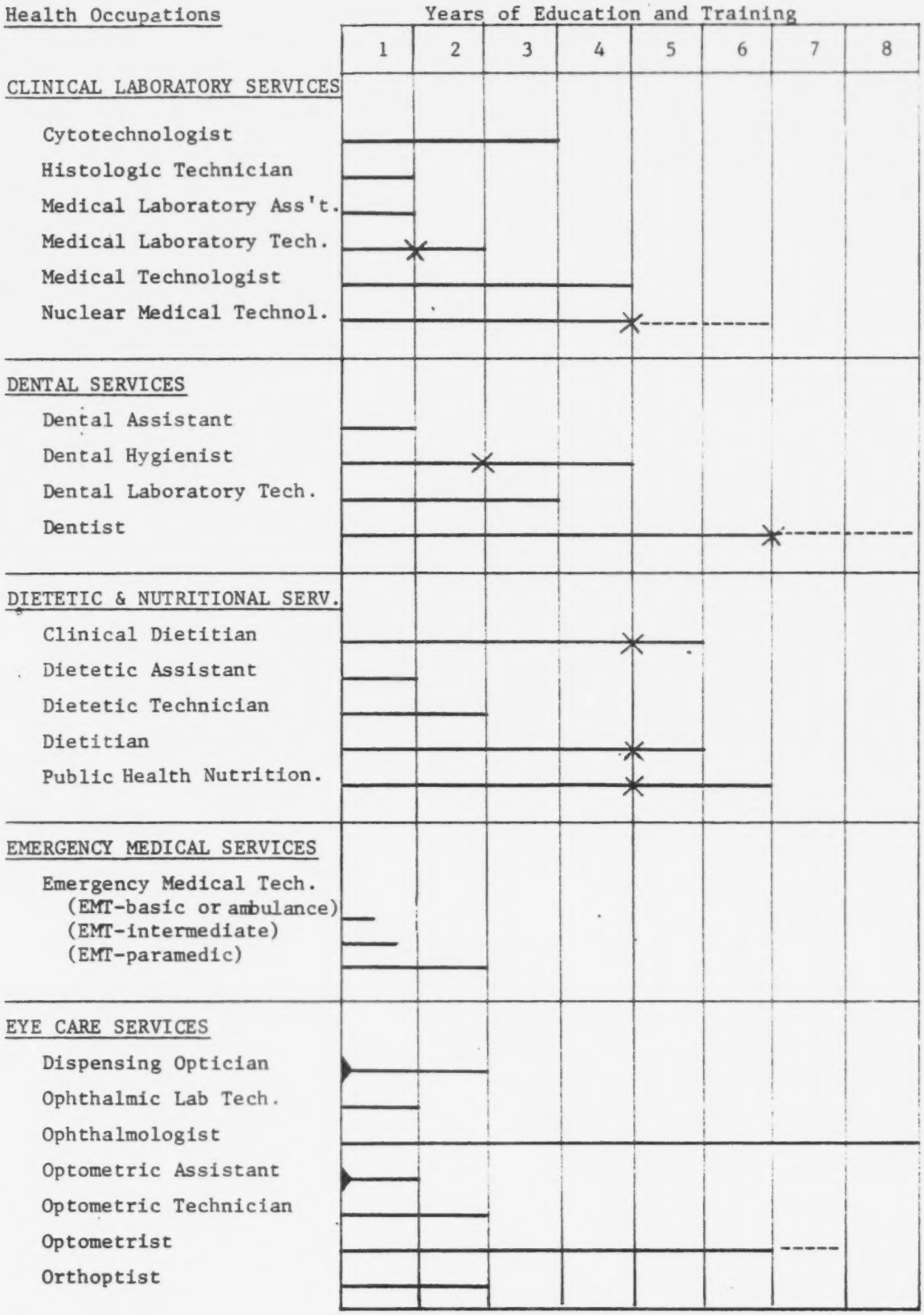
- Sometimes even after one has selected a school or program one is not completely confident of one's choice. You may want to do additional exploring or change into another area. How much flexibility is there to do this in the schools you are comparing?

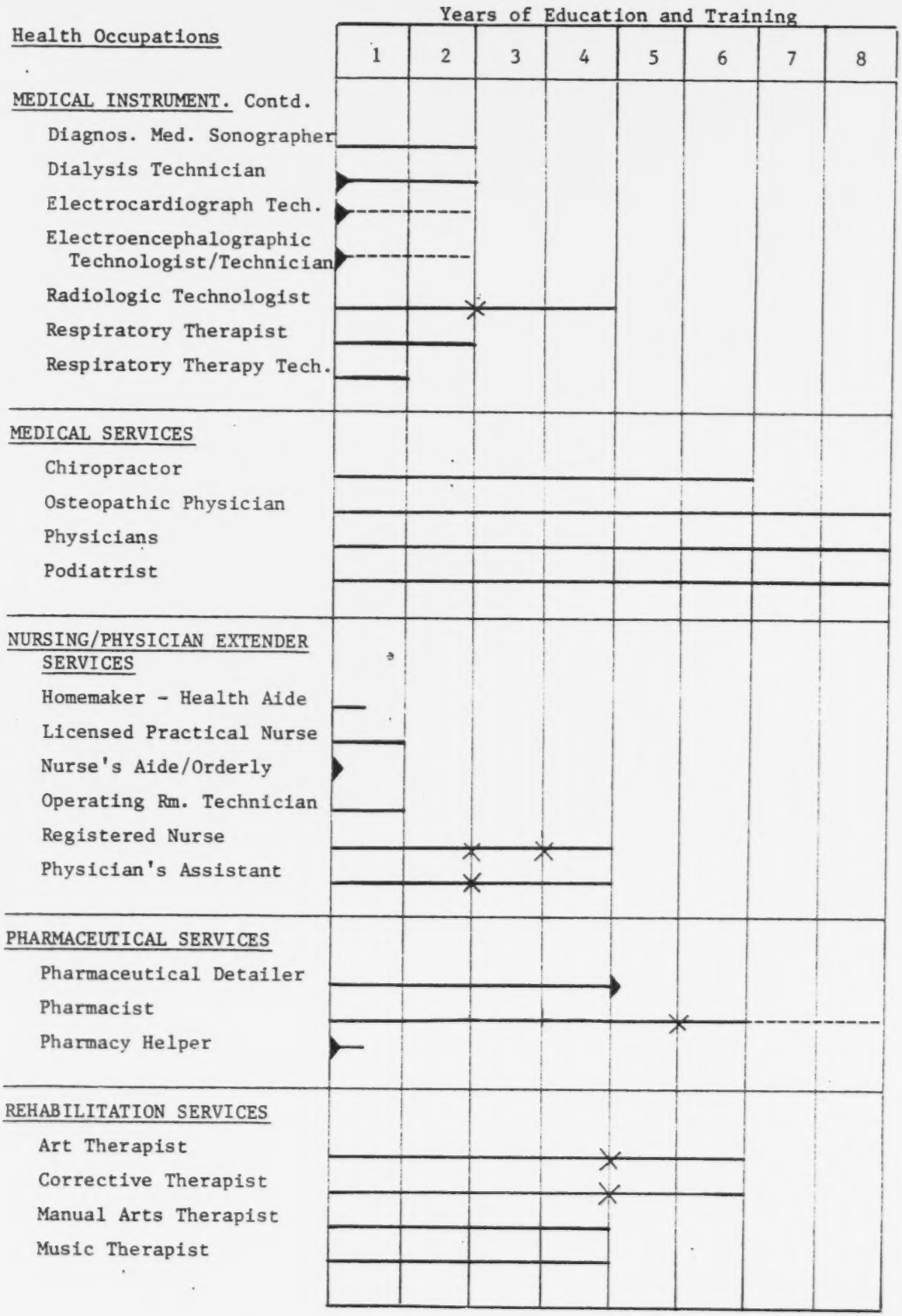
- What is the social life like? Although studies should be the major concern, you should not neglect the social side of your education. Are the type of social activities you enjoy readily available? What type of atmosphere appeals to you? City? Country? What types of people would you like to meet?

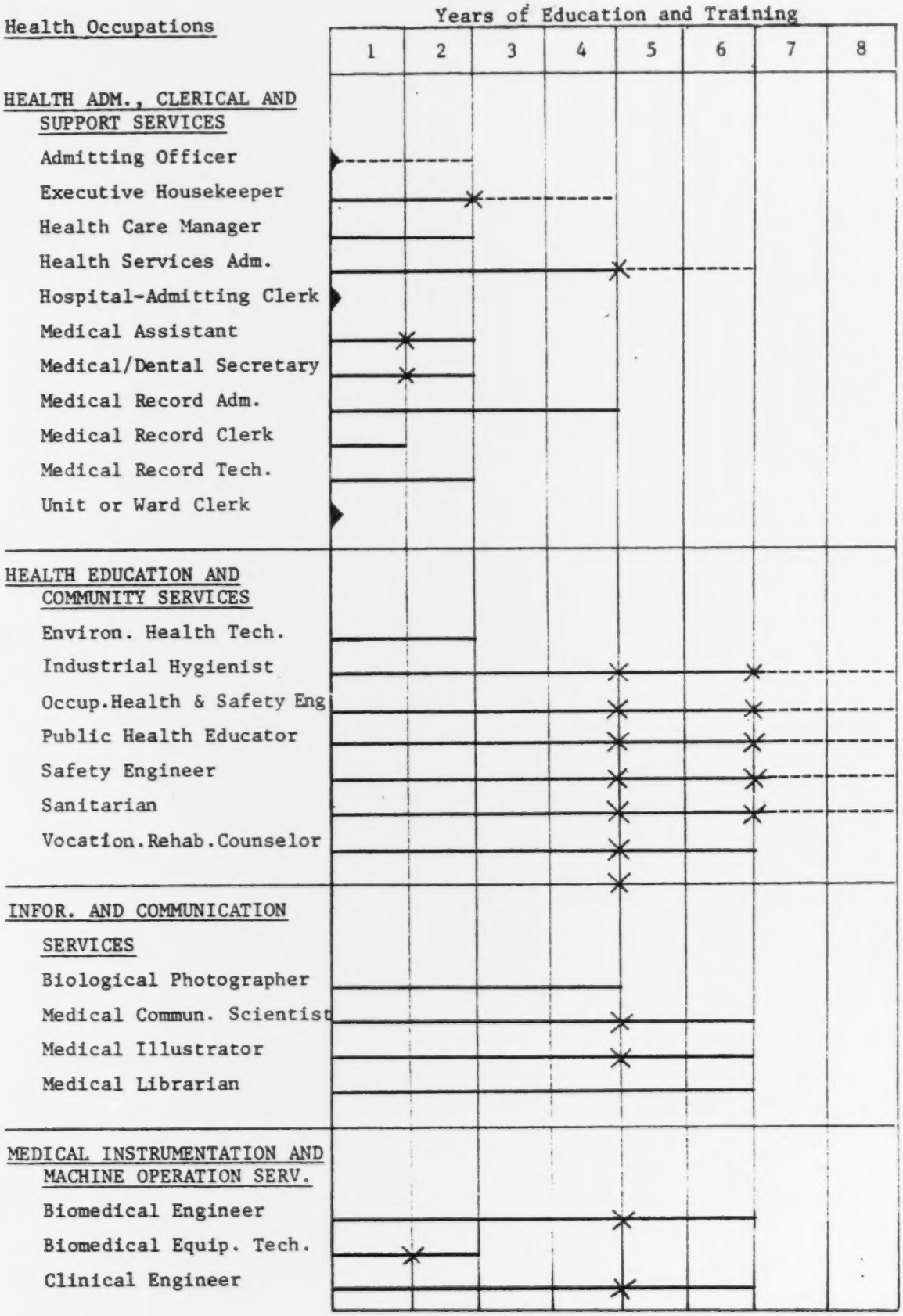
- What sports are offered? Will you be able to continue doing sports activities you enjoy?

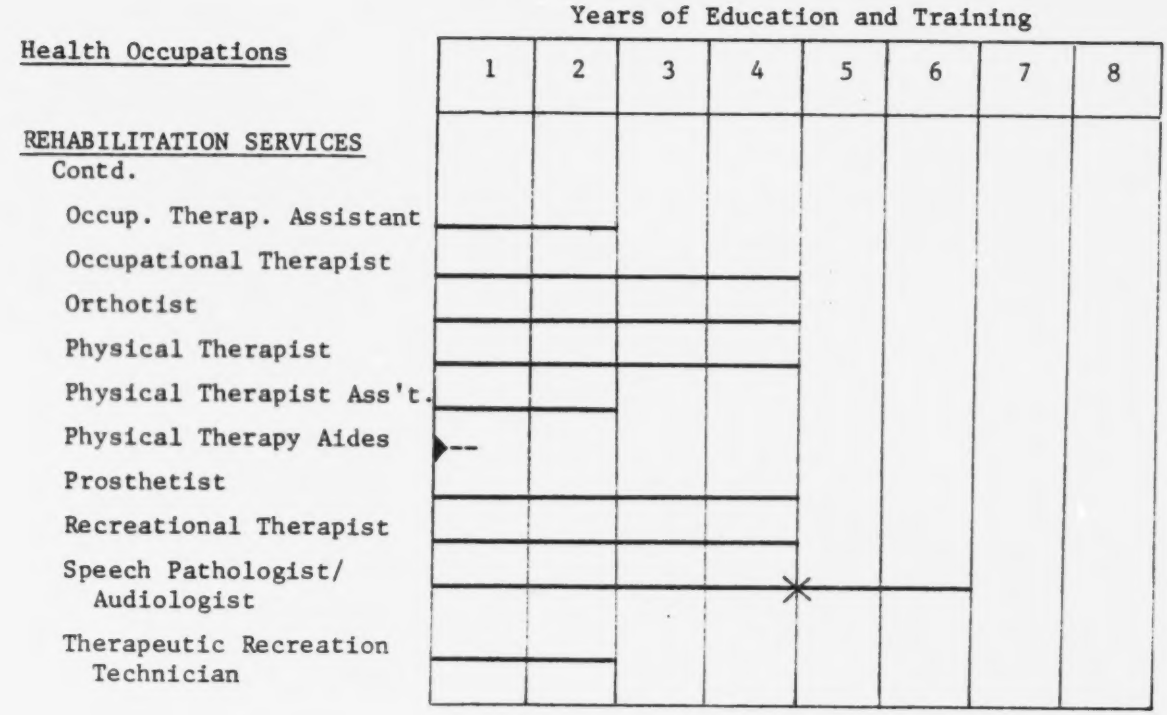
HEALTH CAREERS EDUCATION CALENDAR

(See Key to use of Calendar at end of table)




Years of Education and Training
Health Occupations
1
2
3
4
5
6
7
8
MEDICAL INSTRUMENT. Contd.
Diagnos. Med. Sonographer
Dialysis Technician
Electrocardiograph Tech.
Electroencephalographic Technologist/Technician
Radiologic Technologist
Respiratory Therapist
Respiratory Therapy Tech.
MEDICAL SERVICES
Chiropractor
Osteopathic Physician
Physicians
Podiatrist
NURSING/PHYSICIAN EXTENDER SERVICES
Homemaker - Health Aide
Licensed Practical Nurse
Nurse's Aide/Orderly
Operating Rm. Technician
Registered Nurse
Physician's Assistant
PHARMACEUTICAL SERVICES
Pharmaceutical Detailer
Pharmacist
Pharmacy Helper
REHABILITATION SERVICES
Art Therapist
Corrective Therapist
Manual Arts Therapist
Music Therapist


Health Occupations
Years of Education and Training
1
2
3
4
5
6
7
8
HEALTH ADM., CLERICAL AND SUPPORT SERVICES
Admitting Officer
Executive Housekeeper
Health Care Manager
Health Services Adm.
Hospital-Admitting Clerk
Medical Assistant
Medical/Dental Secretary
Medical Record Adm.
Medical Record Clerk
Medical Record Tech.
Unit or Ward Clerk
HEALTH EDUCATION AND COMMUNITY SERVICES
Environ. Health Tech.
Industrial Hygienist
Occup.Health & Safety Eng
Public Health Educator
Safety Engineer
Sanitarian
Vocation.Rehab.Counselor
INFOR. AND COMMUNICATION SERVICES
Biological Photographer
Medical Commun. Scientist
Medical Illustrator
Medical Librarian
MEDICAL INSTRUMENTATION AND MACHINE OPERATION SERV.
Biomedical Engineer
Biomedical Equip. Tech.
Clinical Engineer



Calendar Key:

An apprenticeship, special course, or on-the-job training of varying lengths of time

Either on-the-job training or formal education

Length of formal training

Career can be entered at this point

The above chart is from the Health Careers Guidebook (U.S. Department of Health, Education, and Welfare, 1979)

E. Plan With Flexibility

Good plans mean plans with several options. Situations never remain static but continually change. Jobs in high demand today may suddenly become obsolete tomorrow. A technological advance can bring about a number of new professions. The development of the kidney dialysis machine together with government policy is one such example. When the federal government passed legislation to finance kidney dialysis and kidney transplantation, hundreds of dialysis centers were established. Dialysis technology became a new specialty. Other new developments may create new opportunities but, in turn, may also eliminate certain jobs. In today's world of rapid advances in science and technology, we are seeing occupational shifts more frequently. Being prepared for change becomes all the more critical and, as such, one needs to have several options.

Other Options

Developing other options allows you flexibility. If one plan does not work out, you have an alternative. Or, if you plan in a general direction, you can select from several possibilities when the time comes. The important fact is that you have considered alternatives and are not locked into a single unchangeable plan.

As you begin to identify your career choice, examine closely the characteristics of the work. What particular skills, aptitudes and interests are required? Can they be applied in a related or different occupation? In order to answer these questions, you will need to expand your knowledge about job characteristics in other occupations. The chart, Job Characteristics, from the Occupational Outlook Quarterly, on the following page can serve as a starting guide in your research. It lists some of the health occupations and the characteristics associated with each of them. You can easily see which ones share common characteristics.

Read more about occupations with similar characteristics.

- How are they similar? How are they different?
- Is the training similar? At what point is the training identical and where does it diverge?
- If one were trained in one specialty what additional training, if any, does one need to switch to another?
- Are there occupations outside the health field that have similar characteristics?
- Which ones might appeal to you if you were to change your occupational choice?

Job Characteristics

	1 High school	2 Tech. School/(T) Apprenticeship/(A)	3 Junior College	4 College	5 Problem-solving ability	6 Uses tools, machinery	7 Instructs others	8 Repetitious work	9 Hazardous	10 Outdoors	11 Physical stamina	12 Generally confined	13 Precision	14 Works with detail	15 Frequent public contact	16 Part-time	17 Able to see results	18 Creativity	19 Influences others	20 Competition on the job	21 Works as part of a team	22 Jobs widely scattered	23 Initiative
DENTAL OCCUPATIONS																							
Dentists				+	x	x	x						x		x		x		x		x	x	x
Dental Ass'ts.	x	T				x	x	x						x	x	x					x	x	
Dental Hygienist			x			x	x	x				x		x	x	x					x	x	
Lab Technicians					x	x	x	x				x	x	x			x				x	x	
MEDICAL PRACTITIONERS																							
Chiropractors				+	x	x	x				x		x	x	x	x	x		x		x	x	x
Optometrists				+	x	x	x				x		x	x	x	x	x		x		x	x	x
Osteopathic Phys.				+	x	x	x	x			x		x	x	x		x		x		x	x	x
Physicians				+	x	x	x	x			x		x	x	x		x		x		x	x	x
Podiatrists				+	x	x	x				x		x	x	x		x		x		x	x	x
MEDICAL TECHNOL. TECHNICIAN, ASS'T. OCCUPATIONS																							
Electrocardiograph Technicians	x	T				x	x	x					x	x	x	x					x	x	
Electroencephalographic technol/ technicians	x	T				x	x	x					x	x	x						x	x	
Emergency Med. Technicians	x	T			x	x	x		x	x	x		x	x	x						x	x	
Med. Lab.Workers	x					x		x	x			x	x	x							x	x	
Med. Record Technician/Clerk	x						x					x	x	x							x	x	
Operating Rm.Tech.						x	x		x				x	x	x						x	x	
Optometric Ass't.	x					x	x						x	x	x						x	x	
Radiologic Tech.			x			x	x		x				x	x	x	x						x	
Respiratory Ther.	x					x	x						x	x	x						x	x	
NURSING OCCUPATION																							
Registered Nurses					x	x	x		x			x		x	x	x	x			x	x	x	x
LPNs		T				x	x		x			x		x	x	x	x			x	x	x	
Nursing Aides, orderlies,attend.						x	x	x	x			x			x	x					x	x	

Job Characteristics

	1 High School	2 Tech. School/(T) Apprenticeship/(A)	3 Junior College	4 College	5 Problem-solving ability	6 Uses tools, machinery	7 Instructs others	8 Repetitious work	9 Hazardous	10 Outdoors	11 Physical stamina	12 Generally confined	13 Precision	14 Works with detail	15 Frequent public contact	16 Part-time	17 Able to see results	18 Creativity	19 Influences others	20 Competition on the job	21 Works as part of a team	22 Jobs widely scattered	23 Initiative
THERAPY AND REHABILITATION OCCUPATIONS																							
Occupational Therapists				x	x	x	x							x	x		x	x	x		x	x	x
Occupational Therapy Ass't.						x	x								x	x	x		x		x	x	
Physical Thera.				x	x	x	x				x			x	x		x	x	x		x	x	x
Physical Thera. Ass'ts., Aides	x	x				x	x				x				x		x		x		x	x	
Speech Pathol. & Audiologists				+	x	x	x						x	x	x		x	x	x		x	x	x
OTHER HEALTH OCCUPATIONS																							
Dietitians				x	x		x							x	x	x		x			x	x	x
Dispensing Opticians	x	A				x	x						x	x	x						x	x	
Health Serv. Administrators				+	x									x				x	x		x	x	x
Medical Record Administrators				x	x								x	x					x		x	x	x
Pharmacists				+	x		x					x	x	x	x						x	x	x

Anticipating the Future

As you plan your career, be on the lookout for emerging trends--keep up-to-date on what is happening. Various events can affect your career choice. For example, the current trend of a larger population of older persons means that geriatric medicine is a fast-growing specialty, and health care facilities will need to focus more on services for the elderly. Hence, there will be a high demand for people who are knowledgeable about geriatrics.

As new developments take place consider how they might possibly change or alter your intended occupation.

- How might the work change?
- How might the number of employees needed change?
- What new types of places might one work?
- What sections of the country is your occupation in greatest demand?
- Would knowledge in another area be helpful? (For example, computers are used in many ways in the health care field. How might computer skills be an asset in your preparation?)
- Can you apply your training to a newly emerging occupation? (New areas or specialities that are developing frequently lack trained personnel. Hence, opportunities are usually very good.)
- Is competition in your area growing because schools are graduating large numbers of students?
- Would a higher level of training be helpful in getting a job?
- Would being too specialized create a disadvantage?
- How might you apply your training in a different type of work?

Notice that a number of relatively new occupations are the result of combining different specialties. Art therapy, the combination of art and psychology, is one such example. New occupations in the future may require knowledge and skills from diverse areas. You may wish to explore ways in which you can apply seemingly different areas of interest to an occupation.

V. Readings and A-V Materials

Selected Readings

Journals, Magazines, and Periodicals

Directories and Guides

Government Resources

Other Information Sources

Audiovisual Materials

SELECTED RESOURCES

SELECTED READINGS

ARCO Career Guidance Series, ARCO Publishing Co., New York.

Aim for a Job in a Hospital, Weir Richard Kirk (1977)

Your Future in an Occupational Therapy Career, Frances L. Shuff (1974)

Your Future in Optometry, James R. Gregg (1976)

Your Future in Pharmacy, James E. Kraemer (1975)

Being a Nursing Aide, Hospital Research and Education Trust. Robert J. Brady Co., Bowie, Maryland (1976).

Career Information Center, Vol. 7, Health, Butterick, New York (1979)

Careers in the Health Field, Essie E. Lee, Julian Messner, New York (1974)

Careers in Hospital Administration, Maintenance, and Medical Secretarial Services, Gordon Lebowitz, Fairchild Publications (1975)

Careers in Therapy, Medical Technology, and Nutrition, Gordon Lebowitz, Fairchild Publications (1974)

Dental Laboratory Technology, Nicholas Martinelli. C.V. Mosby Co., 11830 Westline Industrial Drive, St. Louis, Missouri, 63141

Exploring Careers; Health Occupations, U.S. Dept. of Labor, Bureau of Labor Statistics, Bulletin 2001-11, (1979). Obtained from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402

Exploring Health Occupations, Watson and Arns. McGraw Hill/Gregg Division, St. Louis, Missouri (1976)

Handbook of Health Careers, A Guide to Employment Opportunities, Janet Zhun Nassif, Human Sciences Press, New York (1980)

Health Care Careers, James P. Sweeney, Prentice-Hall, Inc., Englewood Cliffs, New Jersey (1977)

Health Careers Guidebook, U.S. Dept. of Labor/ U.S. Dept. of Health, Education, and Welfare, Washington, D.C.

Health Technicians and Career Opportunities, Robert E. Kinsinger (editor), J.G. Ferguson Publishing Co., Chicago, Illinois (1970)

Hello, World! A Careers Exploration Program; Health Services, Ruth Holloway, Elaine H. Stowe, Field Educational Publications, Inc., Palo Alto, California (1973)

The Hospital Ward Clerk, Ruth Perrin Stryker, C.V. Mosby Co., 11830 Westline Industrial Drive, St. Louis, Missouri, 63141 (1970)

Innovations in Community Health Nursing: Health Care Delivery in Shortage Areas, Anne R. Warner, C.V. Mosby Co., St. Louis, Missouri (1978)

Introduction to Health Careers, Joan M. Birchenall, Mary Eilenn Streight, J.B. Lippincott Co., New York (1978)

Introduction to Health Professions, Ruth S. Odgers and Burress C. Wenborg, C.V. Mosby Co., St. Louis, Missouri (1972)

Jobs in Health Care, Stanley L. Englebardt, Lothrop, Lee and Shepard Co., New York (1973). (This book is more suitable for ninth grade students.)

Medical Laboratory Assistant, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402

Medicine's New Technology: A Career Guide, Janet Zhun Nassif, ARCO Publishing Co., New York (1979).

Nursing and Allied Careers, Gordon Lebowitz, Fairchild Publications (1973).

Physical Education and Sports: An Introduction to Alternative Careers, Sheldon L. Fordham, Carol Ann Leaf, John Wiley and Sons, Inc., New York, (1978).

Radiologic Technology - A Future for You, T.J. Jackson, M.H.A., Tiresias Press (1974).

You and a Health Career, Gordon Lebowitz, Fairchild Publications.

Your Career in Health Care, Beverly J. Rambo, Diane Edith Watson, Nursing and Allied Health Series, McGraw Hill/Gregg Division, New York (1976).

The following series of "Opportunities" books are all available through:

VGM Career Horizons
A Division of National Textbook Company
8259 Niles Center Road
Skokie, Illinois 60077

Opportunities In...

Chiropractic Health Care, R.C. Schafer (1979)

Hospital Administration, I. Donald Snook, Jr. (1982)

Nursing, Keville Frederickson (1977)

Occupational Therapy, Marguerite Abbott, Marie Louise Franciscus (1979)

Opticianry, Joseph L. Bacotti (1982)

Opticianry Today, Russell L. Stimson (1976)

Optometry, Frank M. Kitchell, O.D. (1982)

Osteopathic Medicine, Leonard E. Heffel (1974)

Paramedical Careers, Alex Kacon (1979)

Pharmacy Careers, Fred B. Gable (1982)

Physical Therapy, Bernice Krumhansl (1979)

Podiatric Medicine, Jules Shangold, D.P.M., Frank Greenberg, D.P.M. (1982)

Pyschiatry, Fenton Keyes (1982)

PAMPHLETS

There are a great number of fine publications put out by the many professional associations. These pamphlets describe in greater detail the specific profession, as well as provide information on schools, training programs and financial aid.

You can obtain information by contacting the individual association directly. For a listing of associations and their addresses see Appendix A.

JOURNALS, MAGAZINES, AND PERIODICALS ...of a general health nature

("Sample" indicates publisher may be willing to send a sample copy to your library. Request should be on official school stationery.)

American Journal of Public Health, George Rosen, American Public Health Association, 1015 Eighteenth Street, NW, Washington, D.C., 20036.

Fitness for Living, Robert Bahr, Rodale Press, Inc., 33 Minor Street, Emmaus, Pa., 18049. Sample.

Health, George W. Northup, American Osteopathic Association, 212 E. Ohio Street, Chicago, Illinois, 60611. Sample.

Healthways, magazine digest. Louse Brownson, American Chiropractic Assoc., Inc. 2200 Grand Avenue, Des Moines, Iowa 50312. Sample.

Life and Health, the national health journal, J. DeWitt Fox, Review and Herald Publishing Association, 6856 Eastern Ave., NW, Washington, D.C., 20012 Sample.

Prevention, the magazine for better health, Rodale Press, Inc., 33 Minor Street, Emmaus, Pa., 18049. Sample.

Today's Health, David Sendler, American Medical Association, 535 N. Dearborn Street, Chicago, Illinois, 60610. Sample.

WHO Chronicle, American Public Health Association, Inc., 1015 Eighteenth St., Washington, D.C., 20036.

World Health, F. J. Tomiche, World Health Organization, American Public Health Association, 1015 Eighteenth Street, NW, Washington, D.C., 20036

JOURNALS, MAGAZINES, AND PERIODICALS...of a more technical nature but of a general interest also

American Journal of Nursing, Thelma M. Schoor, American Journal of Nursing Co., 10 Columbus Circle, New York, N.Y., 10019

American Journal of Occupational Therapy, Cordelia Myers, American Occupational Therapy Association, 251 Park Avenue S., New York, N.Y., 10010 Sample.

The Dental Assistant, American Dental Assistants Association, 401 First National Bank Bldg., La Porte, Indiana, 46350

Journal of Practical Nursing, Nancy Bass Lutzke, National Association for Practical Nurse Education and Service, 1465 Broadway, New York, N.Y. 10036

Modern Nursing Home, Robert M. Cunningham, Jr., McGraw-Hill, 230 W. Monroe Street, Chicago, Illinois, 60606. Sample.

New England Journal of Medicine, Franz J. Ingelfinger, Massachusetts Medical Society, 10 Shattuck Street, Boston, Mass., 02115

New Jersey Nurse, New Jersey State Nurses' Association, 320 W. State Street, Trenton, New Jersey, 08618.

Nursing Homes, Cogswell House, Inc., 222 Wisconsin Avenue, Lake Forest, Illinois, 60045. Sample.

Nursing Outlook, American Journal of Nursing Co., 10 Columbus Circle, New York, N.Y., 10019. Sample.

R.N. Magazine, Richard F. Newcomb, Litton Publications, Oradell, New Jersey.

DIRECTORIES AND GUIDES

Allied Health Education Directory, 8th Edition, Committee on Allied Health Education and Accreditation, American Medical Association, Chicago, 1979.

Barron's Guide to the Two-Year Colleges, Volumes 1 and 2. Barron's Educational Series, Inc., Woodbury, New York, 1981.

College Degrees by Mail. A Comprehensive Guide to Alternative Degree Programs, John Bear, Rafton and Bear, Publishers, Inc., Mendocino, California, 1975 (revised 1977).

The Complete Guide to New Jersey Colleges and Vocational Schools, Silvio R. Laccotti (editor), William H. Wise and Co., Inc., 1977.

Continuing Education: A Guide to Career Development Programs, Gaylord Professional Publications, Syracuse, New York (1977)

Going to College in New Jersey, New Jersey Dept. of Higher Education, Trenton, New Jersey (1980)

Guide to Career Education, Muriel Lederer, Quadrangle/The New York Times Book Company, New York (revised 1976)

Guide to Undergraduate External Degree Programs in the United States, Eugene J. Sullivan (editor), American Council on Education, One Dupont Circle, Washington, D.C. 20036 (1980)

Health Sciences and Services: A Guide to Information Sources, Lois F. Lunin, Gale Research Co., Detroit (1979)

Inventory of Degree Programs at N.J. Colleges and Universities, N.J. Department of High Education, Trenotn, New Jersey (1980)

Lovejoy's Career and Vocational School Guide, Clarence E. Lovejoy, Simon and Schuster, New York (1978)

National Director of External Degree Programs, Alfred W. Munzert, Hemisphere Publications, Machias, New York (1976)

GOVERNMENT RESOURCES

Armed Forces - The Armed Forces offer a number of training programs in the health care field. Information can be obtained by writing or phoning your closest recruitment office.

Federal Job Information Center, 970 Broad Street, Newark, N.J., 07102

U.S. Department of Labor, Bureau of Apprenticeship and Training.
Newark: Rm. 838 Federal Building, 970 Broad Street, Newark, N.J., 07102
Trenton: Rm. 410, Federal Building, 402 E. State Street, Trenton, N.J.,08607

U.S. Office of Personnel Management, Washington, D.C.

"Careers in Mental Health," 1975. U.S. Department of Health, Education, and Welfare, Alcohol, Drug Abuse, and Mental Health Administration, U.S. Government Printing Office.

A Counselor's Guide to Occupational Information: A Catalog of Federal Career Publications, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C. (1980)

Dictionary of Occupational Titles, U.S. Department of Labor, Employment and Training Administration, Washington, D.C. (1977)

Occupational Outlook Handbook, 1980-81 Edition. U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C. (1980)

Health, United States, 1980. U.S. Department of Health and Human services, Public Health Service, Office of Health Research, Statistics, and Technology, Washington, D.C. (1980)

Jobs for Which You Can Train Through Apprenticeship, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C. (1980)

OTHER INFORMATION SOURCES

American Vocational Journal, Lowell A. Burkett, American Vocational Association, Inc., 1510 H. Street, NW, Washington, D.C., 20005. Sample.

Occupational Outlook Quarterly, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

Center for Health Affairs, Department of Auxiliary Services and Health Promotion, 746-760 Alexander Road, Princeton, New Jersey, 08540.

Education Hotline: 800-792-8355. Joint Project of N.J. Department of Education and Thomas A. Edison State College

AUDIOVISUAL MATERIALS

There are a large number of health career films. Unfortunately, most are relatively old and do not adequately depict the current status of the occupation. For the most part we have included only audiovisuals made since 1974. A few films are undated, but were selected because of their subject content.

16 mm films/video-cassettes

Between Life and Death by National Highway Traffic Safety
27 min., color (no date)
"emergency medical services team"
Modern Talking Picture Service
5000 Park Street North
St. Petersburg, Florida 33709

Caring by Homemaker Upjohn
13 min., color (1975)
"professional health services at home"
Modern Talking Picture Service
5000 Park Street North
St. Petersburg, Florida 33709

Code Blue
26 min., color (1970)
"minority health care professionals"
National Audio-Visual Center
General Service Administration
Reference Section
Washington, D.C. 20409

also,
Modern Talking Picture Service
5000 Park Street North
St. Petersburg, Florida 33709

AUDIOVISUAL MATERIALS Contd.

16 mm films/video-cassettes Contd.

Dentures and Your Health: A Report by American Dental Association
11 min., color (no date)
"dental laboratory technicians and dentists"
Modern Talking Picture Service
5000 Park Street North
St. Petersburg, Florida 33709

Dermatology: The Myth, The Medicine
28 min., color (1979)
"interviews with five dermatologists"
Walter J. Klein Company, Ltd.
Director of Distribution
6301 Carmel Road
P.O. Box 220766
Charlotte, North Carolina · 28222

Easy Street
15 min., color (1979)
"four minority health professionals - upbeat presentation"
Modern Talking Picture Service
5000 Park Street North
St. Petersburg, Florida 33709

Helping Hands: Careers in Health, Working World Series
15 min., color (1974)
"health careers grouped as services inside the hospital and in the community"
Counselor Films, Inc.
1740 Cherry Street
Philadelphia, Pennsylvania 19103

Horizons: Oral and Maxillofacial Surgery
19 min., color (no date)
"all about the specialty of oral surgery"
Modern Talking Picture Service
5000 Park Street North
St. Petersburg, Florida 33709

Laboratory Technology: A Balanced Perspective
13 min., color (1976)
"a modern hospital lab in operation"
University of Iowa
Audio-Visual Center
C-5 East Hall
Iowa City, Iowa 52242

AUDIOVISUAL MATERIALS Contd.

16 mm films/video-cassettes Contd.

The New Nurse: A Career for All Reasons
color (1982)
"modern nursing as it really is"
16 mm and 3/4" video-cassette
(available for purchase only)

National League for Nursing
10 Columbus Circle
New York, New York 10019
$45. video-cassette; $165. 16 mm film (non-member prices)

Also available:
A Counselor's/Teacher's Guide to Nursing Education and Career Opportunities
designed to supplement video/film $4.50

Nurse Practitioner
11 min., color (1974)
"a nurse-practitioner at work in a rural setting"
Pelican Films, Inc.
292 Madison Avenue
New York, New York 10017

Orthodontics and You by American Association of Orthodontists
25 min., color (no date)
"story of orthodontics and orthodontists"
Modern Talking Picture Service
5000 Park Street North
St. Petersburg, Florida 33709

The Other Doctor
26 min., color (1977)
"describes Doctor of Osteopathy"
American Osteopathic Association
Attn: Order Department
212 East Ohio Street
Chicago, Illinois 60611

Paramedic
(1977)
"documentary of two paramedics"
Pyramid Film Productions
P.O. Box 1048
Santa Monica, California 90406

AUDIOVISUAL MATERIALS Contd.

16 mm films/video-cassettes Contd.

People Who Help: Health Careers
18 min., color (1975)
"examines health career opportunities"
Columbia Broadcasting System
383 Madison Asenue
New York, New York 10017

BFA Education Media, Div. of CBS, Inc.
2211 Michigan Avenue
P.O. Box 1795
Santa Monica, California 90406

Portrait of a Nurse
27 min., color (1976)
"the new 'expanded role' of a nurse"
Butler Freedman Films
Cambridge, Massachusetts

Reach Out: Occupational Therapy in the Community
20 min., color (1977)
American Occupational Therapy Association
6000 Executive Blvd.
Rockville, Maryland 20852

What Will I Do With My Time? by New York Life Insurance
28 min., color (no date)
"documentary on the range of career opportunities"
Modern Talking Picture Service
5000 Park Street North
St. Petersburg, Florida 33709

Filmstrips/Slides

Health Services, Part I, from The Careers Series
86 frames/cassette (1978)
"overview of health services field"
Guidance Associates
P.O. Box 300
White Plains, New York 10602

Health Services, Part 2, from The Careers Series
filmstrip/cassette (1978)
"interviews with health services workers"

N.M.N.A. Promises You Victory
48 slides/cassette (1978)
"the professionalism of the male nurse"
National Male Nurse Association
2309 State Street, West Office
Saginaw, Michigan 48602

The following resources for Health Occupations Education are available from the

New Jersey Occupational/Consumer Resource Center
Building 871, Plainfield Avenue
Edison, New Jersey 08817 (201) 985-7769

or may be purchased from the companies indicated. Prices may not be current. Only resources from 1973 are included. For information on older resources, contact the Center.

* * *

Counselor Films
1740 Cherry Street
Philadelphia, Pennsylvania 19103

Is a Career in the Health Services for You?* (1973)
(16 mm - 15 min.) $220.00

Is a Career as a Technician for You? (1973)
(16 mm - 15 min.) $220.00

* * *

Current Affairs
P.O. Box 398
24 Danbury Road
Wilton, Connecticut 06897

Working As a Dental Hygienist (1975)
(2 cassettes, 1 discussion guide) $20.00

Working As a Paramedic (1975)
(2 cassettes, 1 discussion guide) $20.00

* * *

McGraw Hill Films
Dept. 455
1221 Avenue of the Americas
New York, New York 10030

Allied Health Careers (1978)
(4 filmstrips, 4 cassettes, teacher's guide) $72.00

Careers in Focus: Exploring Health Occupations (1976)
(1 filmstrip, 3 interview cassettes, 10 each of student manuals, worksheets, 1 teacher's manual and key) Grades 6-9 $120.00

Careers in Focus: Interview Cassette Library Volume 2: Health Careers (1976)
(12 cassettes, 7 min. each) Grades 7-12 $120.00

*This film is also available through the New Jersey State Museum Film Loan Service, 205 W. State Street, CN 530, Trenton, N.J. 08625 (609) 292-6313,6314.

Prentice Hall Media
150 White Plains Road
Tarrytown, New York 10591

Careers for Bilinguals: Health Services (1977) $55.00
(2 filmstrips, 2 cassettes, one side English, one side Spanish, spirit masters, teacher's guide)

Careers in Health (1976)
(5 filmstrips, 5 cassettes, 1 teacher's guide) $129.00

* * *

Video-Visions Careers
Cherry Hill School System
contact: Linda Zalusky
Cherry Hill High School East,
Kresson Road
Cherry Hill, New Jersey 08003
(609) 424-2222

(3/4" Video-cassettes/brochure)

Career Titles:

Medical Technology (1981)
Laboratory Team: Bacterial, Chemistry, Hematology, Blood Bank 13½ min.

Hospital Technicians (1981)
Respiratory - X-ray - EKG 18 min.

Pharmacy
Hospital 18 min.

Hospital Administration
J.F. Kennedy Hospital: 3 Administrators 15 min.

Physical Therapy
Physical Therapist: Al Daniel 21 min.

Chiropractic
Chiropractor: Dr. M. Hatrak 22½ min.

Media Materials, Inc.
2936 Remington Avenue
Baltimore, Maryland 21211

A Career in Dentistry (1978)
(1 cassette, 30 student booklets, 1 post test, 1 teacher's guide) $9.95
Grades 6 - Adult; High Interest - Low Vocabulary

A Career in Medicine (1978)
(1 cassette, 30 student booklets, 1 post test, 1 teacher's guide)
Grades 6 - Adult; High Interest - Low Vocabulary $9.95

* * *

Multi-Media Productions, Inc.
P.O. Box 5097
Stanford, California 94305

A Career in Dentistry (1978)
(1 cassette, 30 student booklets, 1 post test, 1 teacher's guide) $9.95
Grades 6 - Adult; High Interest - Low Vocabulary

A Career in Medicine (1978)
(1 cassette, 30 student booklets, 1 post test, 1 teacher's guide) $9.95
Grades 6 - Adult; High Interest - Low Vocabulary

* * *

Multi-Media Productions, Inc.
P.O. Box 5097
Stanford, California 94305

Pathescope Educational Media, Inc.
71 Weyman Avenue
New Rochelle, New York 10802

Careers in Health Services (1974)
(2 filmstrips, 2 cassettes, teacher's guide) $50.00

A Career in Nursing (1973)
(2 filmstrips, 2 cassettes, teacher's guide) $50.00

People at Work: Nursing (Spanish version) (1975)
(1 filmstrip, 2 cassettes - one English, one Spanish, teacher's guide)

Appendix

APPENDIX A

Professional Organizations

APPENDIX B

Explanation of Data, People and Things from the Dictionary of Occupational Titles, U.S. Department of Labor, Fourth Edition, 1977 Employment and Training Administration

Appendix A

PROFESSIONAL ORGANIZATIONS

Alliance for Engineering in Medicine and Biology
Suite 404
4405 East-West Highway
Bethesda, MD 20014

American Academy of Family Physicians
1740 West 92nd Street
Kansas City, MO 64114

American Academy of Physicians' Assistants
2341 Jefferson Davis Highway #700
Arlington, VA 22202

American Art Therapy Association, Inc.
428 E. Preston Street
Baltimore, MD 20202

American Association for Clinical Chemistry
Suite 903
1725 K Street, NW
Washington, DC 20006

American Association for Music Therapy
35 West 4th Street
Room 777
New York City, NY 10003

American Association for Rehabilitation Therapy
Box 93
North Little Rock, AR 72116

American Association of Bioanalysts
818 Olive Street
St. Louis, MO 63101

American Association of Blood Banks
1828 L Street, NW
Washington, D.C. 20036

American Association of Cardiographic Technologists
P.O. Box 17631
Irvine, CA 92713

American Association of Colleges of Pharmacy
Office of Student Affairs
4630 Montgomery Avenue, Suite 201
Bethesda, MA 20014

American Association of Dental Schools
1625 Massachusetts Avenue, NW
Washington, D.C. 20036

American Association of Medical Assistants
1 East Wacker Drive, Suite 2110
Chicago, Illinois 60601

American Association of Respiratory Therapy
1720 Regal Row, Suite 112
Dallas, Texas 75235

American Athletic Trainers Assoc.
638 West Duarte Road
Arcadia, CA 91006

American Cardiology Technologists Association
Scott and White Clinic
Temple, TX 76501

American Chiropractic Association
Public Affairs Department
2200 Grand
Des Moines, IA 50312

American College of Hospital Administrators
840 North Lake Shore Drive
Chicago, IL 60611

American College of Nurse-Midwives
1012 14th Street NW
Washington, D.C. 20005

American College of Nursing Home Administrators
4650 East-West Highway
Washington, D.C. 20014

American Corrective Therapy Association
Route Elm Hill
Jonesboro, TN 37659

American Dance Therapy Association
Suite 230
1000 Century Plaza
Columbia, MD 21044

American Dental Assistants Association
666 N. Lake Shore Drive
Suite 1130
Chicago, IL 60611

American Dental Association
211 E. Chicago Avenue
Chicago, IL 60611

American Dental Hygienists' Association
444 N. Michigan Avenue, #3400
Chicago, IL 60611

The American Dietetic Association
430 N. Michigan Avenue
Chicago, IL 60611

American Health Care Association
1200 15th Street
Washington, DC 20005

American Home Economics Association
2010 Massachusetts Avenue, NW
Washington, DC 20036

American Hospital Association
840 North Lake Shore Drive
Chicago, IL 60611

American Medical Association
Dept. of Allied Health Education
535 North Dearborn Street
Chicago, IL 60610

American Medical Record Association
John Hancock Center, Suite 1850
875 N. Michigan Avenue
Chicago, Illinois 60611

American Medical Women's Association, Inc.
1740 Broadway
New York, New York 10019

American Medical Writers Association
5275 River Road
Bethesda, MD 20016

American Nurses Association
Department of Nursing Education
2420 Pershing Road
Kansas City, MD 64108

American Occupational Medical Association
150 N. Wacker Drive
Chicago, IL 60606

American Occupational Therapy Association
6000 Education Blvd.
Rockville, MD 20852

American Optometric Association
Education and Manpower Division
243 North Lindbergh Blvd.
St. Louis, MO 63141

The American Orthoptic Council
The University of Iowa Hospitals
Department of Opthalmology
Iowa City, IA 52242

American Orthotic and Prosthetic Association
1444 N Street, NW
Washington, DC 20005

American Osteopathic Association
Department of Public Relations
212 East Ohio Street
Chicago, IL 60611

American Physical Therapy Association
1156 15th Street NW
Washington, DC 20005

American Podiatry Assocation
20 Chevy Chase Circle NW
Washington, DC 20015

American Public Health Association
Division of Program Services
1015 - 18th Street, NW
Washington, D.C. 20036

American School Health Association
Box 708
Kent, Ohio 44240

American Society of Medical Technologists
330 Meadow Fern Drive
Houston, TX 77067

American Society of Microbiology
1913 I Street, NW
Washington, DC 20006

American Society of Clinical Pathologists
Board of Registry
P.O. Box 4872
Chicago, IL 60680

American Society of Cytology
Health Sciences Center - Jefferson University
120 S. 9th Street
Philadelphia, PA 19107

American Society of EEG Technologists, Inc.
32500 Grand River Avenue, #103
Farmington, MI 48024

American Society of Orthopedic Technologists
Bob Hevey, Secretary
P.O. Box 314
Somerville, MA 02143

American Society of Radiologic Technologists
55 E. Jackson Blvd., Suite 1820
Chicago, IL 60604

American Society of Safety Engineers
850 Busse Highway
Oark Ridge, IL 60068

American Speech-Language-Hearing Association
10801 Rockville Pike
Rockville, MD 20852

The Association for the Advancement of Health Education
1201 16th Street, NW
Washington, DC 20036

Association of American Medical Colleges
1 Dupont Circle, NW, Suite 200
Washington, DC 20036

Association of Medical Illustrators
5820 Wilshire Blvd. #500
Los Angeles, CA 90036

Association of Operating Room Technicians
1100 West Littletown Blvd., Suite 101
Littletown, Colorado 80120

Association of Surgical Technologists, Inc.
Caller No. E
Littleton, CO 80121

Association of University Programs in Health Administration
Office of Research and Student Affairs
1 Dupont Circle, Suite 420
Washington, DC 20036

Biological Photographic Association
Box 2603, West Durham Station
Durham, NC 27705

Biomedical Engineering Society
P.O. Box 2399
Culver City, CA 90230

Council on Chiropractic Education
3209 Ingersoll Street, Suite 206
Des Moines, IA 50312

Environmental Management Association
Health Care Facilities
1701 Drew Street
Clearwater, FL 33515

Health Sciences Communications Association
2343 N. 115th Street
Wauwatosa, WI 53226

International Society for Clinical Laboratory Technology
818 Olive Street
St. Louis, MO 63101

Institute of Food Technologists
221 North LaSalle Street
Chicago, IL 60601

Joint Commission on Allied Health
Personnel in Ophthalmology
1575 University Avenue
St. Paul, MN 55104

Medical Library Association
919 N. Michigan Avenue
Suite 3208
Chicago, IL 60611

National Assoc. for Music Therapy,
Inc.
P.O. Box 610
Lawrence, KA 66044

National Association for Practical
Nurse Education and Service, Inc.
122 E. 42nd Street
New York, N.Y. 10168

National Association of Dental
Laboratories
3801 Mt. Vernon Avenue
Alexandria, VA 22305

National Association of Human
Services Technologists
1127 11th Street
Sacramento, CA 95814

National Association of Physical
Therapists
P.O. Box 367
West Covina, CA 91793

National Association of Science
Writers
P.O. Box 294
Greenlawn, N.Y. 11740

National Athletic Trainers
Association
P.O. Drawer 1865
Greenville, NC 27834

National Council for Homemaker-Home
Health Aide Services, Inc.
67 Irving Place - 6th Floor
New York, N.Y. 10003

National Dental Association
5506 Connecticut Avenue, NW
Washington, D.C. 20005

National Executive Housekeepers
Association, Inc.
Business and Professional Bldg.
414 Second Avenue
Gallipolis, Ohio 45631

National Federation of Licensed
Practical Nurses, Inc.
888 Seventh Avenue
New York, N.Y. 10106

National Geriatrics Society
212 W. Wisconsin Avenue
Third Floor
Milwaukee, WI 53203

National League for Nursing
10 Columbus Circle
New York, N.Y. 10019

National Male Nurse Assocation
2309 State Street, West Office
Saginaw, MI 48602

National Medical Association
1720 Massachusetts Avenue, NW
Washington, D.C. 20036

National Optometric Assocation
3746 Main Stret, Box F
East Chicago, IL 10019

National Pharmaceutical Association
Howard University College of Pharmacy
2300 4th Street, NW
Washington, D.C. 20059

National Podiatry Association
2115 Van Ness Avenue
San Francisco, CA 94109

National Rehabilitative Counseling
Association
1522 K Street, NW
Washington, D.C. 20005

National Registry of Emergency Medical Technicians
1395 E. Dublin-Granville Road.
P.O. Box 29233
Columbus, OH 43229

National Therapeutic Recreation Society
1601 North Kent Street
Arlington, VA 22009

National Society for Medical Research
1029 Vermont Avenue, NW #700
Washington, DC 20005

Opticians Association of America
1250 Connecticut Avenue, NW
Washington, D.C. 20036

Society for Diagnostic Medical Sonographers
3634 Swoboda Road
Verona, WI 53593

Society of Nuclear Medicine
475 Park Avenue South
New York, N.Y. 10016

U.S. Dept. of Health and Human Services
Bureau of Health Professions
9000 Rockville Pike
Bethesda, MD 20014

U. S. Department of Transportation
Emergency Medical Services Branch
400 7th Street, SW
Washington, D.C. 20590

Appendix B

EXPLANATION OF DATA, PEOPLE AND THINGS

Much of the information in this publication is based on the premise that every job requires a worker to function in some degree to Data, People and Things. These relationships are identified and explained below. They appear in the form of three listings arranged in each instance from the relatively simple to the complex in such a manner that each successive relationship includes those that are simpler and excludes the more complex.[1] The identifications attached to these relationships are referred to as worker functions, and provide standard terminology for use in summarizing exactly what a worker does on the job.

A job's relationship to Data, People and Things can be expressed in terms of the lowest numbered function in each sequence. These functions taken together indicate the total level of complexity at which the worker performs. The fourth, fifth and sixth digits of the occupational code numbers reflect relationships to Data, People and Things, respectively.[2] These digits express a job's relationship to Data, People and Things by identifying the highest appropriate function in each listing as reflected by the following table:

DATA (4th digit)	PEOPLE (5th digit)	THINGS (6th digit)
0 Synthesizing	0 Mentoring	0 Setting-Up
1 Coordinating	1 Negotiating	1 Precision Working
2 Analyzing	2 Instructing	2 Operating-Controlling
3 Compiling	3 Supervising	3 Driving-Operating
4 Computing	4 Diverting	4 Manipulating
5 Copying	5 Persuading	5 Tending
6 Comparing	6 Speaking-Signaling	6 Feeding - Offbearing
	7 Serving	7 Handling
	8 Taking Instructions - Helping	

Definitions of Worker Functions

DATA: Information, knowledge, and conceptions, related to data, people, or things, obtained by observation, investigation, interpretation, visualization, and mental creation. Data are intangible and include numbers, words, symbols, ideas, concepts, and oral verbalization.

0 Synthesizing: Integrating analyses of data to discover facts and/or develop knowledge concepts or interpretations.

1 Coordinating: Determining time, place, and sequence of operations or action to be taken on the basis of analysis of data; executing determination and/or reporting on events.

2 Analyzing: Examining and evaluating data. Presenting alternative actions in relation to the evaluation is frequently involved.

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[1]As each of the relationships to People represents a wide range of complexity, resulting in considerable overlap among occupations, their arrangement is somewhat arbitrary and can be considered a hierarchy only in the most general sense.

[2]Only those relationships which are occupationally significant in terms of the requirements of the job are reflected in the code numbers. The incidental relationships which every worker has to Data, People, and Things, but which do not seriously affect successful performance of the essential duties of the job, are not reflected.

3. Compiling: Gathering, collating, or classifying information about data, people, or things. Reporting and/or carrying out a prescribed action in relation to the information is frequently involved.

4 Computing: Performing arithmetic operations and reporting on and/or carrying out a prescribed action in relation to them. Does not include counting.

5 Copying: Transcribing, entering, or posting data.

6 Comparing: Judging the readily observable functional, structural, or compositional characteristics (whether similar to or divergent from obvious standards) of data, people, or things.

PEOPLE: Human beings; also animals dealt with on an individual basis as if they were human.

0 Mentoring: Dealing with individuals in terms of their total personality in order to advise, counsel, and/or guide them with regard to problems that may be resolved by legal, scientific, clinical, spiritual, and/or other professional principles.

1 Negotiating: Exchanging ideas, information, and opinions with others to formulate policies and programs and/or arrive jointly at decisions, conclusions, or solutions.

2 Instructing: Teaching subject matter to others, or training others (including animals) through explanation, demonstration, and supervised practice; or making recommendations on the basis of technical disciplines.

3. Supervising: Determining or interpreting work procedures for a group of workers, assigning specific duties to them, maintaining harmonious relations among them, and promoting efficiency. A variety of responsibilities is involved in this function.

4 Diverting: Amusing others. (Usually accomplished through the medium of stage, screen, television, or radio.)

5 Persuading: Influencing others in favor of a product, service, or point of view.

6 Speaking-Signaling: Talking with and/or signaling people to convey or exchange information. Includes giving assignments and/or directions to helpers or assistants.

7 Serving: Attending to the needs or requests of people or animals or the expressed or implicit wishes of people. Immediate response is involved.

8 Taking Instructions-Helping: Helping applies to "non-learning" helpers. No variety of responsibility is involved in this function.

THINGS: Inanimate objects as distinguished from human beings, substances or materials; machines, tools, equipment and products. A thing is tangible and has shape, form, and other physical characteristics.

0 Setting up: Adjusting machines or equipment by replacing or altering tools, jigs, fixtures, and attachments to prepare them to perform their functions,

change their performance, or restore their proper functioning if they break down. Workers who set up one or a number of machines for other workers or who set up and personally operate a variety of machines are included here.

1 Precision Working: Using body members and/or tools or work aids to work, move, guide, or place objects or materials in situations where ultimate responsibility for the attainment of standards occurs and selection of appropriate tools, objects, or materials, and the adjustment of the tool to the task require exercise of considerable judgment.

2 Operating-Controlling: Starting, stopping, controlling, and adjusting the progress of machines or equipment. Operating machines involves setting up and adjusting the machine or material(s) as the work progresses. Controlling involves observing gages, dials, etc., and turning valves and other devices to regulate factors such as temperature, pressure, flow of liquids, speed of pumps, and reactions of materials.

3 Driving-Operating: Starting, stopping, and controlling the actions of machines or equipment for which a course must be steered, or which must be guided, in order to fabricate, process, and/or move things or people. Involves such activities as observing gages and dials; estimating distances and determining speed and direction of other objects; turning cranks and wheels; pushing or pulling gear lifts or levers. Includes such machines as cranes, conveyor systems, tractors, furnace charging machines, paving machines and hoisting machines. Excludes manually powered machines, such as handtrucks and dollies, and power assisted machines, such as electric wheelbarrows and handtrucks.

4 Manipulating: Using body members, tools, or special devices to work, move, guide, or place objects or materials. Involves some latitude for judgment with regard to precision attained and selecting appropriate tool, object, or material, although this is readily manifest.

5 Tending: Starting, stopping, and observing the functioning of machines and equipment. Involves adjusting materials or controls of the machine, such as changing guides, adjusting timers and temperature gages. turning valves to allow flow of materials, and flipping switches in response to lights. Little judgment is involved in making these adjustments.

6 Feeding-Offbearing: Inserting, throwing, dumping, or placing materials in or removing them from machines or equipment which are automatic or tended or operated by other workers.

7 Handling: Using body members, handtools, and/or special devices to work, move or carry objects or materials. Involves little or no latitude for judgment with regard to attainment of standards or in selecting appropriate tool, object, or material.